PROCEEDINGS

OF THE

AMERICAN PHILOSOPHICAL SOCIETY

HELD AT PHILADELPHIA

FOR

PROMOTING USEFUL KNOWLEDGE.

Vol. XXXI.

JANUARY TO DECEMBER, 1893.

PHILADELPHIA:
PRINTED FOR THE SOCIETY
BY MAC CALLA & COMPANY.
1893.

PROCEEDINGS

OF THE

AMERICAN PHILOSOPHICAL SOCIETY

HELD AT PHILADELPHIA FOR PROMOTING USEFUL KNOWLEDGE.

VOL. XXXI. JANUARY, FEBRUARY, MARCH, 1893. No. 140.

TABLE OF CONTENTS.

PAGE

Annual Meeting, January 6, 1893 1
Stated Meeting, January 6, 1893 1
Stated Meeting, January 20, 1893 5
Stated Meeting, February 3, 1893 9
Stated Meeting, February 17, 1893 14
Description of the Original Manuscript Journals and Field Notebooks of Lewis and Clark, on which was based Biddle's History of the Expedition of 1804–6, and which are now in the possession of the American Philosophical Society, in Philadelphia. *By Dr. Elliott Coues* 17
Vocabulary of the Kwakiutl Language. *By Dr. Franz Boas* 84
The Life History of Certain Moths of the Family Cochlidopodidæ, with Notes on their Spines and Tubercles (with four plates). *By Dr. A. S. Packard* 93
The Thyrsos of Dionysos and the Palm Inflorescence of the Winged Figures of Assyrian Monuments. *By Dr. Charles S. Dolley* 180
Observations on the Psoas Parvus and Pyramidalis. A Study of Variation. *By Thomas Dwight, M.D., LL.D.* 117
On a New Method of Determining the General Perturbations of the Minor Planets. *By W. P. McK. Ritter* 194
Stated Meeting, March 3, 1893 126
Stated Meeting, March 17, 1893 130

☞ It is requested that the receipt of this number be acknowledged.

☞ In order to secure prompt attention it is requested that all correspondence be addressed simply "To the Secretaries of the American Philosophical Society, 104 S. Fifth St., Philadelphia."

PUBLISHED FOR THE SOCIETY

BY

MacCALLA & COMPANY,

PRINTERS, STEREOTYPERS AND ELECTROTYPERS.

EXTRACT FROM THE LAWS.

CHAPTER XII.

OF THE MAGELLANIC FUND.

SECTION 1. John Hyacinth de Magellan, in London, having in the year 1786 offered to the Society, as a donation, the sum of two hundred guineas, to be by them vested in a secure and permanent fund, to the end that the interest arising therefrom should be annually disposed of in premiums, to be adjudged by them to the author of the best discovery, or most useful invention, relating to Navigation, Astronomy, or Natural Philosophy (mere natural history only excepted); and the Society having accepted of the above donation, they hereby publish the conditions, prescribed by the donor and agreed to by the Society, upon which the said annual premiums will be awarded.

CONDITIONS OF THE MAGELLANIC PREMIUM.

1. The candidate shall send his discovery, invention or improvement, addressed to the President, or one of the Vice-Presidents of the Society, free of postage or other charges; and shall distinguish his performance by some motto, device, or other signature, at his pleasure. Together with his discovery, invention, or improvement, he shall also send a sealed letter containing the same motto, device, or signature, and subscribed with the real name and place of residence of the author.

2. Persons of any nation, sect or denomination whatever, shall be admitted as candidates for this premium.

3. No discovery, invention or improvement shall be entitled to this premium, which hath been already published, or for which the author hath been publicly rewarded elsewhere.

4. The candidate shall communicate his discovery, invention or improvement, either in the English, French, German, or Latin language.

5. All such communications shall be publicly read or exhibited to the Society at some stated meeting, not less than one month previous to the day of adjudication, and shall at all times be open to the inspection of such members as shall desire it. But no member shall carry home with

PROCEEDINGS

OF THE

AMERICAN PHILOSOPHICAL SOCIETY,

HELD AT PHILADELPHIA, FOR PROMOTING USEFUL KNOWLEDGE.

VOL. XXXI. JANUARY, 1893. No. 140.

January 6, 1893.

The annual meeting for election of Officers and Councilors was held this afternoon between the hours of 2 and 5 o'clock, after due public notice. The result of the ballot was reported by the Judges and the Clerks to the Society at its evening meeting.

Stated Meeting, January 6, 1893.

Mr. THOMAS H. DUDLEY in the Chair.

Mr. Harold Goodwin, a newly elected member, was presented to the Chair and took his seat.

Dr. Elliott Coues requested by letter a further extension for three months of the time during which he could retain the Lewis and Clark MSS. Upon motion, the request was granted.

Acceptances of membership were read from Dr. Samuel G. Dixon, Philadelphia; Dr. James Macfarlane, Lansdowne, Pa., and Dr. James Ellis Humphrey, Amherst, Mass.

An invitation from the Wadsworth Athenæum, at Hartford, to be present at the opening of the new Libraries and Art Galleries, was read.

PROC. AMER. PHILOS. SOC. XXXI. 140. A. PRINTED MARCH 3, 1893.

The Enoch Pratt Free Library of Baltimore requested to be placed on the Proceedings' exchange list. On motion, the application was granted.

The Academy of Natural Sciences acknowledged the receipt of the Secretary's letter of December 16, relating to the Keating-Poinsett Collection, stating that the same had been referred to the Curators.

A circular from the American Folk-Lore Society, announcing its annual meeting for 1892 at Boston.

Accessions to the Library were reported from the Royal Asiatic Society (Straits Branch), Singapore; Royal Society of Victoria, Melbourne; Department of Mines, Wellington, N. Z.; Anthropological Society, Tokyo, Japan; Statistika Central Byråus, Stockholm, Sweden; Maatschappij der Nederlandsche Letterkunde, Leiden, Holland; Académie Royale de Belgique, Bruxelles; Académie des Sciences, Cracow, Austria; Anthropologische Gesellschaft, Vienna, Austria; Naturforschende Gesellschaft, Altenburg, Germany; Physiologische Gesellschaft, Gesellschaft für Anthropologie, etc., Gesellschaft für Erdkunde, Berlin; Gartenbauverein, Darmstadt; K. Oeffentliche Bibliothek, Dresden; Verein für Erdkunde, Halle a. S.; Deutsche Seewarte, Hamburg; Geographische Gesellschaft, Munich, Bavaria; Naturwissenschaftlicher Verein, Regensburg; Biblioteca N. C. Firenze, Italia; R. Accademia dei Lincei, Rome; Société de Géographie, Lille, France; Commission des Annales des Mines, Société de L'Enseignement, Société de Géographie, Rédaction *Cosmos*, Paris; R. Academia de la Historia, Madrid, Spain; South African Philosophical Society, Cape Town; R. Astronomical Society, R. Geographical Society, Editors of *Nature*, London; University Observatory, Glasgow; Royal Society, Edinburgh; Mr. Horatio Hale, Clinton, Ontario; Canadian Institute, Toronto; Boston Athenæum, Society of Natural History, Boston, Mass.; Harvard University, Cambridge, Mass.; Travelers' Insurance Co., Hartford, Conn.; Editors of *American Journal of Science*, New Haven; Brooklyn Library; Cornell University, Ithaca, N. Y.; American Institute of Electrical Engineers, Mathematical So-

ciety, Meteorological Observatory, Dr. Joel Asaph Allen, New York; Mr. William John Potts, Camden; Free Public Library, Jersey City; College of Pharmacy, Editors of the *Medical News*, Editors of the *Medical and Surgical Reporter*, Hon. Frederick Fraley, Dr. Walter M. James, Dr. D. Jayne and Son, Messrs. Abraham Jordan, J. G. Rosengarten, David Henry Wright, Philadelphia; Editor of the *American Chemical Journal*, Baltimore; Commissioner of Pensions, U. S. Department of Agriculture, Census Office, Hydrographic Office, Washington, D. C.; University of California, Berkeley; Agricultural Experiment Station, Lincoln, Neb.; Instituto Fisico-Geografica, San José, C. A.; Société Scientifique du Chile, Santiago, S. A.

The following deaths were reported:

Sir Richard Owen, December 18, 1892, æt. 89.
John O. Westwood, January 2, 1893, æt. 88.
Eben N. Horsford, January 1, 1893, æt. 75.
Isaac C. Martindale, January 3, 1893, æt. 50.

The President was authorized to appoint a suitable person to prepare the usual obituary notice of Mr. Martindale.*

The report of the Clerks and Judges of the election held this afternoon at the hall of the Society was read, and the following members declared to have been duly chosen Officers and Councilors for the ensuing year, 1893:

President.

Frederick Fraley.

Vice-Presidents.

E. Otis Kendall, W. S. W. Ruschenberger, J. P. Lesley.

* Dr. Joseph T. Rothrock was subsequently appointed.

Secretaries.

George F. Barker, Daniel G. Brinton, Henry Phillips, Jr., George H. Horn.

Curators.

Patterson Du Bois, J. Cheston Morris, R. Meade Bache.

Treasurer.

J. Sergeant Price.

Councilors.

William A. Ingham, Thomas H. Dudley, Robert Patterson, Charles S. Wurts.

(*Councilor for two years, in place of I. C. Martindale, deceased.*)

Henry C. Baird.

This being the evening for the nomination of a member to serve as Librarian of the Society during the ensuing year, Mr. Henry Phillips, Jr., was renominated, and the nominations were closed.

Mr. Goodwin exhibited a portrait of the late John Vaughan Eyre.

Pending nominations Nos. 1235, 1249, 1250 and 1251 were read.

And the Society was adjourned by the Presiding Member.

Stated Meeting, January 20, 1893.

Mr. RICHARD VAUX in the Chair.

Dr. Francis X. Dercum, a lately elected member, was presented to the Chair and took his seat.

Correspondence was submitted as follows:

A circular from the Royal Academy of Sciences of Turin, Italy, announcing its offer of the Ninth Bressa Prize, to be given to the author or inventor who shall have made the most important and useful discovery, or published the most valuable work, on Science, Natural History, Chemistry, etc., etc., during the years 1891–94.

A letter from the New York State Library, Albany, asking the Society to exhibit a complete set of its publications at the Columbian Celebration, the same to become the property of the State Library when the celebration is over.

The following letter from the Academy of Natural Sciences of Philadelphia, in relation to the Keating-Poinsett collection of Aztec handworks deposited by the American Philosophical Society, which, on motion, was referred to the Curators.

PHILADELPHIA, January 19, 1893.

MR. HENRY PHILLIPS, JR.,

Secretary of the American Philosophical Society:

Dear Sir:—I have the honor to inform you that your communication of the 16th ult., regarding the custody of the Keating-Poinsett collection of Aztec objects, having been referred for consideration to the Curators of the Academy, the following report was received by the Academy at the meeting of the 17th inst., and a copy was ordered to be sent to you in reply to your letter of inquiry:

"The Curators, to whom has been referred a communication from the American Philosophical Society, dated December 16, 1892, and addressed to the President and members of the Academy, in reference to the retention of the Poinsett Collection of Aztec handworks deposited in the Academy several years ago, respectfully report:

"Although all the specimens of the Poinsett Collection are artificial, and therefore not absolutely within the scope of the Academy's chief purpose, which is the study of natural objects, it is considered desirable that

the Academy shall still retain said collection as a loan on the conditions stipulated at the time of its deposit.

"The American Philosophical Society may be assured that the Poinsett Collection, while in custody of the Academy, will be carefully preserved; and that as soon as the perfectly fireproof addition to the Academy's building now in course of construction, under contract to be completed next June, is finished, there will be ample room for a satisfactory display of it as well as of similar collections. As the Museum of the Academy is freely open to the public from eight to ten hours every day, except Sunday, throughout the year, it is confidently conjectured that the Poinsett Collection will be visited and studied here by a greater number of persons than it would be in any other place of exhibition in the city.

"It is neither necessary nor expedient that the Academy should propose any condition whatever in connection with the retention of the Poinsett Collection as a loan from the American Philosophical Society."

The report is signed and submitted on behalf of the Curators by Dr. W. S. W. Ruschenberger, the Chairman of the Board.

I remain, yours very truly,

EDWARD J. NOLAN,
Recording Secretary, A. N. S., Philadelphia.

A letter from Dr. Elliott Coues, Washington, D. C., thanking the Society for its grant of extension of time in the Lewis and Clark MSS. loan; also, offering a paper for publication in the Proceedings, descriptive of the Lewis and Clark MSS.

Letters of envoy were received from the Maatschappij der Nederlandsche Letterkunde, Leiden; Instituto Fisico Geografice Nacional de Costa Rica, San José; Mr. William John Potts, Camden, N. J.

Letters of acknowledgment were received from the Royal Geographical Society of Australasia (Queensland Branch), Brisbane (138); Linnean Society of New South Wales (135–138), Royal Society of New South Wales (136, 137), Sydney; Maatschappij der Nederlandsche Letterkunde, Leiden (137, 138); I. R. Accadémia degli Agiati, Rovereto, Tyrol (138); K. K. Militär-Geographische Institut, Vienna, Austria (137, 138); Naturforschende Gesellschaft, Emden (138); Naturwissenschaftlicher Verein des Regierungs-Bezirks Frankfurt, a. O. (135); Geographische Gesellschaft (137), Naturhistorische Gesellschaft (138), Hanover, Prussia; Naturwissenschaftlicher Verein, Regensburg, Bavaria (137); R. Accademia di Scienze,

Lettrè ed Arti, Modena, Italy (138); Osservatorio Astronomico, Turin (138); Prof. Gaston Maspero, Paris (138); Zoölogical Society, London (137, 138, and Trans., xvii, 1, 2); Public Library of Boston (132–138); State Library of Pennsylvania, Harrisburg (Trans., xvii, 1, 2); Denison Scientific Association, Granville, O. (138).

Accessions to the Library were reported from the Geographical Society, Tokyo, Japan; Société Finno-Ougrienne, Helsingfors, Finland; Mining Department of South Australia, Adelaide, Australia; Ministerie van Binnenlandsche Lachen, 'S Gravenhage, Z. Holland; Société R. de Geographie D'Anvers, Bruxelles; Naturwissenschaftlicher Verein des Reg.-Bez. Frankfurt a. O., Prussia; Société Vaudoise Sciences Naturelles, Lausanne, Switzerland; Editor of "La Revue des Revues," Prof. E. Levasseur, Paris, France; R. Academia de Ciencias y Artes, Barcelona, Spain; Philological Society, Society of Arts, Royal Meteorological Society, Editor of the "Geological Magazine," London, England; Geological Society, Manchester, England; American Academy of Arts and Sciences, Boston, Mass.; Harvard University, Museum of Comparative Zoölogy, Cambridge, Mass.; Yale University, New Haven, Conn.; New York State Library, Albany; Dr. Joel Asaph Allen, New York, N. Y.; Academy of Science, Mr. George F. Becker, Rochester, N. Y.; Franklin Institute, College of Pharmacy, Mr. Henry Carey Baird, Philadelphia, Pa.; Prof. J. T. Rothrock, West Chester, Pa.; Maryland Academy of Sciences, Johns Hopkins University, Baltimore, Md.; Anthropological Society, Bureau of the Mint, Bureau of Statistics, Washington, D. C.; Elisha Mitchell Scientific Society, Chapel Hill, N. C.; Denison University, Editors of the "Journal of Neurology," Granville, O.; State Board of Health, Nashville, Tenn.; Agricultural Experiment Stations, Hanover, N. H., New Haven, Conn., Experiment, Ga., Baton Rouge, La., Bryan, Tex.; Agricultural College, Mich.; Madison, Wis.; St. Anthony Park, Minn.; Corvallis, Ore.; Fargo, N. Dak.; Observatorio de Rio de Janeiro.

The Committee on the Michaux Legacy presented the

following report and resolutions, which were unanimously adopted by the Society:

To the American Philosophical Society:

The Michaux Committee respectfully reports:

That at a meeting of the Committee held on December 29, 1892, the following letter was received from Prof. J. T. Rothrock:

"December 16, 1892.

"To the American Philosophical Society:

"I most respectfully request that the American Philosophical Society will appropriate from the income of the Michaux Fund the sum of three hundred dollars (if said fund will so admit), to aid in defraying the expenses of collecting facts and statistics bearing upon the relation of our forests to the Commonwealth, promising to furnish a report to the Society by February, 1894.

"Notwithstanding the general interest in the subject of Forestry, there is an utter absence of the data required for any proper presentation of the important questions involved.

"It is thought that no use more immediately helpful and more in accord with the wishes of the testator could be made of the money.

"Very respectfully,

"J. T. Rothrock."

The Committee, having carefully considered the subject, approves of the suggestion of Prof. Rothrock, and submits the following resolution, which it desires shall be passed by the Society:

Resolved, That the sum of three hundred dollars be appropriated out of the income of the Michaux Fund to Prof. J. T. Rothrock, to aid in defraying the expenses of collecting facts and statistics bearing upon the relation of our forests to the Commonwealth of Pennsylvania, which when obtained he shall report in full in writing to the Society.

By order of the Committee,

J. Sergeant Price,
Secretary.

The President was authorized to appoint the Standing Committees of the Society for the ensuing year, which he subsequently did as follows:

Finance.

William B. Rogers, Philip C. Garrett, Charles S. Wurts.

Hall.

J. Sergeant Price, William A. Ingham, Charles A. Oliver.

Publication.

Daniel G. Brinton, George H. Horn, Samuel Wagner,
Patterson Du Bois, Horace Jayne.

Library.

Edwin J. Houston, William John Potts, Jesse Y. Burk,
William H. Greene, William S. Baker.

Michaux Legacy.

Thomas Meehan, J. Sergeant Price, William M. Tilghman,
Isaac Burk, Angelo Heilprin.

Henry M. Phillips' Prize Essay Fund.

Richard Vaux, Henry Phillips, Jr., William V. McKean,
Furman Sheppard, Joseph C. Fraley,
and
The President and the Treasurer of the Society, *ex officio.*

Mr. Henry Phillips, Jr., was unanimously reëlected Librarian of the Society for the ensuing year.

Dr. Elliott Coues presented for the Proceedings, through the Secretaries, "A Description of the MSS. Journals and Field Notebooks of Lewis and Clark."

Pending nominations Nos. 1235, 1249, 1250, 1251, and new nominations Nos. 1252, 1253, 1254, were read.

And the Society was adjourned by the Presiding Member.

Stated Meeting, February 3, 1893.

Mr. VAUX in the Chair.

Dr. Macfarlane took his seat.

Correspondence was submitted as follows:

Letters of envoy were received from the Observatoire Physique Central, St. Petersburg, Russia; K. Akademie der Wis-

senschaften, Vienna, Austria; Royal Irish Academy, Dublin; Mr. Henry Carey Baird, Philadelphia, Pa.

Letters of acknowledgment were received from the Royal Geographical Society of Australasia (Victoria Branch), Melbourne (137); Royal Society of New South Wales, Sydney, Australia (138); Geological Survey of India, Calcutta (138); K. K. Sternwarte, Prag, Bohemia (Trans., xvii, 1, 2, and 138); K. K. Astronomisch-Meteorologisches Observatorium, Triest, Illyria (138); K. K. Naturhistorisches Hofmuseum, Vienna, Austria (138); Naturhistorischer Verein, Bonn, Prussia (137, 138); Physikalisch-Medicinische Societät, Erlangen, Bavaria (138); Naturwissenschaftlicher Verein des Reg.-Bez. Frankfurt a. M. (136, 138); Mr. Tommaso Cannizzaro, Messina, Italy (138); Académie R. des Sciences (Trans., xvii, 1, 2, and 138); Prof. Guido Cora, Turin, Italy (138); Dublin Observatory, Dublin, Ireland (137); Mass. State Experiment Station, Amherst (138); Prof. Andrew A. Blair (136–138); Dr. Isaac Norris, Philadelphia (137, 138); State Library, Albany, N. Y. (138); Denison Scientific Association, Granville, O. (138).

Letters of acknowledgment (139) were received from the Academy of Natural Sciences, Historical Society of Pennsylvania, College of Physicians, Library Company of Philadelphia, Numismatic and Antiquarian Society, Admiral E. Y. Macauley, Hon. James T. Mitchell, Profs. John Ashhurst, Jr., Andrew A. Blair, John H. Brinton, J. Solis Cohen, E. D. Cope, F. X. Dercum, F. A. Genth, Jr., H. D. Gregory, L. M. Haupt, Edwin J. Houston, John M. Maisch, John Marshall, Benjamin Sharp, Drs. George Friebis, Henry Hartshorne, Isaac Norris, Charles A. Oliver, C. N. Peirce, J. W. Robins, W. S. W. Ruschenberger, James Tyson, Messrs. R. Meade Bache, Henry Carey Baird, Charles Bullock, Thomas M. Cleemann, Patterson Du Bois, J. S. Harris, Francis Jordan, Jr., A. S. Letchworth, R. Patterson, Henry Phillips, Jr., Franklin Platt, J. Sergeant Price, Theodore D. Rand, J. G. Rosengarten, Coleman Sellers, D. K. Tuttle, Joseph Wharton, Philadelphia, Pa.

Accessions to the library were reported from the Sociétés des Naturalestes, Kiew, Moscow, Odessa, Russia; K. Akademie

der Wissenschaften, St. Petersburg, Russia; Kolonial Museum, Haarlem, Holland; K. K. Sternwarte, Prag, Bohemia; K. K. Geologische Reichsanstalt, Akademie der Wissenschaften, Vienna, Austria; Verein zur Beförderung des Gartenbaues, Berlin, Prussia; Naturhistorischer Verein, Bonn, Prussia; Oberlausitzische Gesellschaft der Wissenschaften, Görlitz, Prussia; K. Sächsische Gesellschaft der Wissenschaften, Leipzig, Saxony; Deutsche Gesellschaft für Anthropologie, etc., Munich, Bavaria; R. Osservatorio, Turin, Italy; Royal Society, London; Royal Society, Edinburgh; R. Irish Academy, Dublin; Harvard College Astronomical Observatory, Cambridge, Mass.; Yale University Astronomical Observatory, New Haven, Conn.; Mr. Henry Carey Baird, Philadelphia, Pa.; Agricultural Experiment Stations, Newark, Del., Raleigh, N. C., Agricultural College, Miss.; U. S. Naval Institute, Annapolis, Md.; U. S. Naval Observatory, Department of the Interior, Publishers of *The American Monthly*, Mr. Lester F. Ward, Washington, D. C.; Historical Society, Chicago, Ill.; State Historical Society, Iowa City, Ia.; Kansas State Historical Society, Topeka; Geological Survey of Missouri, Jefferson City, Mo.; Sociedad Cientifica "Antonio Alzate," Mexico, Mex.; Institute of Jamaica, Kingston, Jamaica; Sociedad Cientifica Argentina, Buenos Aires, Argentine Republic.

The death of Dr. F. A. Genth was reported (February 2, 1893, æt. 73,) and Dr. G. F. Barker was appointed to prepare the usual obituary notice.

The Secretaries presented a paper by Prof. A. S. Packard (Providence, R. I.) on "The Life History of the Cochliopodidæ."

Dr. Cope made a communication on "The Fauna of the Eurystylus and Equus Beds of the Staked Plains."

Pending nominations Nos. 1235, 1249, 1250, 1251, 1252, 1253, 1254 were read.

The Curators presented the following report relative to the requested loan of objects for the World's Fair Columbian Exposition:

CURATORS' REPORT UPON THE SOCIETY'S RESOLUTION OF OCTOBER 7, 1892.

In the matter of the request for the loan of certain articles, belonging to the Society, for the Chicago Exposition, your Curators respectfully recommend the loan of said articles for said purpose, provided that the city authorities are willing to guarantee their safe transportation, custody and return, in accordance with such forms of agreement as may be approved by the President and Treasurer of the Society.

J. CHESTON MORRIS,
R. MEADE BACHE,
PATTERSON DU BOIS,
Chairman.

After considerable discussion the following motion made by Mr. Du Bois was adopted:

Resolved, That the Society, while being desirous of doing everything to gratify the wishes of the Committee of Councils on the World's Columbian Exposition, feels that it cannot allow the articles mentioned in the request of the Committee, to be taken away at this time, as it intends to have a sesqui-centennial exhibition in its own rooms during the latter part of May, 1893, and will need them here. It is compelled therefore to respectfully decline the proposition presented by your Committee.

The Curators presented the following report upon the collections of the Society:

CURATORS' REPORT.

In response to the Society's resolution of December 16, 1892, the Curators respectfully report:

1. That the cost of transferring the collections and arranging them in suitable cases would not exceed, even if it equaled, five hundred dollars.

2. There would be but slight cost of maintenance of the collections apart from any idea of a paid employé who would have personal daily oversight during the hours in which the collections should be open for exhibition and study.

3. In the nature of the case, it is impossible for the Curators to say what the cost of maintaining the collections in other institutions would be.

4. Although undoubtedly the collections of the Society could all be exhibited in the north room of the hall, yet your Curators would respectfully beg leave to say that the settlement of the original question as to whether or not one or more, and which, if any, of them is to be exhibited in the building, is an indispensable preliminary to the determination of some plan for the arrangement of these collections as required by the resolution of the Society.

J. CHESTON MORRIS,
R. MEADE BACHE,
PATTERSON DU BOIS,
Chairman.

Dr. D. G. Brinton moved "that the Society would prefer to have all its collections displayed by such other educational institutions of Philadelphia as would offer the greatest security and usefulness of said collections."

Dr. Brinton read the following letter from the Department of Archæology of the University of Pennsylvania, requesting the deposit of the Keating-Poinsett collection:

PHILADELPHIA, January, 1893.

TO DANIEL G. BRINTON, M.D.,
Secretary of the Philosophical Society:

Sir:—The Board of Managers of the Department of Archæology and Palæontology of the University of Pennsylvania, understanding that the Philosophical Society is holding under consideration the disposal of a collection of objects of archæological and ethnological interest, known to the public as the "Poinsett Collection," has instructed me to place before your Society a request that the above-named collection be deposited at the Museum of the University of Pennsylvania.

In so doing, I wish respectfully to submit to your Society the following facts:

The Museum of Archæology and Ethnology of the University was founded for the precise purpose of advancing, in this city, the sciences, the names of which appear in its title, and already possesses large and valuable collections, illustrative of the development of man and civilization.

It, moreover, disposes of the services of a competent staff of special scholars, fully qualified to scientifically classify, properly label, and thoroughly "work up" such collections, and to display them to the very best advantage for the use of students.

An isolated collection, containing specimens of the arts and industries of man, as founded upon a few disconnected points—such as the one now at the disposal of the Philosophical Society—however valuable it may be, is practically of very limited use to science. But made to fill an important place in a large ethnological series—where the story it tells forms an interesting chapter of scientific research in the history of mankind—it becomes of priceless value to scholars, and is a link in the long chain of human evolution.

In respectfully submitting the above to the consideration of the Philosophical Society, the Department of Archæology and Palæontology of the University of Pennsylvania pledges itself—if its earnest request be granted—to give the collection the very best accommodation; to provide suitable cases; to display, classify and label it with the most conscientious care, and to spare no pains to insure its preservation, and to make it of the highest possible value to scholars and to the general public.

I remain respectfully yours,

SARA Y. STEVENSON, *Secretary pro tem.*

After discussion, on motion of Dr. J. Cheston Morris, the matter was referred to the Council of the Society.

And the Society was adjourned by the Presiding Member.

Stated Meeting, February 17, 1893.

Dr. J. CHESTON MORRIS in the Chair.

Correspondence was submitted as follows:

A letter from the Société Impériale de Minéralogique, St. Petersburg, announcing the death of its Director, Hon. Nicolas Kokcharow; also the death of its member, Hon. Axel Gadoline.

A letter from the I. R. Accademia degli Agiati, Rovereto, Austria, announcing the death of its member, Prof. D. Guiseppe Pedessalli.

A circular from Columbia College, New York, announcing the regulations for 1893 concerning the Loubat Prize.

A circular from the Bureau of Education, Washington, D. C., in regard to the Educational Exhibit of the World's Columbian Exposition.

Letters of envoy were received from the Geological Survey of India, Calcutta; Royal Statistical Society, Meteorological Office, London, Eng.; Mr. William John Potts, Camden, N. J.; Treasury Department, Washington, D. C.

Letters of acknowledgment (139) were received from the Nova Scotia Institute of Science, Halifax; Geological Survey, Dr. Alfred R. C. Selwyn, Ottawa, Canada; Hon. J. M. Le Moine, Quebec, Canada; Canadian Institute, Toronto; Manitoba Historical and Scientific Society, Winnipeg; Society of Natural History, Portland, Me.; N. H. Historical Society, Concord; Dartmouth College, Hanover, N. H.; Amherst College Library, Amherst, Mass.; State Library of Massachusetts, Public Library of Boston, Massachusetts Historical Society, Boston Society of Natural History, Massachusetts Institute of Technology, Prof. Thomas M. Drown, Messrs. S. P. Sharples, Robert C. Winthrop, Boston, Mass.; Museum of Comparative

Zoölogy, Mr. Robert N. Toppan, Cambridge, Mass.; Free Public Library, New Bedford, Mass.; Essex Institute, Salem, Mass.; American Antiquarian Society, Worcester, Mass.; Profs. O. C. Marsh, Hubert A. Newton, W. D. Whitney, New Haven, Conn.; Albany Institute, Prof. James Hall, Albany, N.Y.; Society of Natural Science, Buffalo, N. Y.; Prof. Edward North, Clinton, N. Y.; Profs. B. G. Wilder, J. M. Hart, Ithaca, N. Y.; American Museum of Natural History, N. Y. Mathematical Society, Astor Library, New York Hospital, Historical Society, Prof. J. J. Stevenson, Messrs. R. S. Hayes, R. W. Raymond, New York; Vassar Brothers Institute, Poughkeepsie, N. Y.; Oneida Historical Society, Utica, N. Y.; U. S. Military Academy, West Point, N. Y.; Prof. Henry M. Baird, Yonkers, N. Y.; Free Public Library, Jersey City, N. J.

Accessions to the Library were reported from the Geological Survey of India, Calcutta; Asiatic Society of Japan, Tokyo; K. Danske Geografiske Selskab, Copenhagen; État Indépendant du Congo, Bruxelles, Belgium; Société Hongroise de Geographie, Budapest; Naturforschende Gesellschaft, Freiburg i. B.; Université de Lyon, France; Messrs. Bela de Gonda, Paul Topinard, Paris, France; Académie R. des Sciences de Lisbonne, Commission des Travaux Géologiques de Portugal, Lisbon; R. Statistical Society, Meteorological Council, Dr. Henry Calderwood, London, Eng.; Philosophical Society, Glasgow, Scotland; Theological Seminary, Andover, Mass.; Brown University, Providence, R. I.; University of the State of New York, Albany; American Chemical Society, Astor Library, American Museum of Natural History, New York; Academy of Natural Sciences, Mercantile Library, Historical Society of Pennsylvania, Wagner Free Institute, Messrs. Abraham Jordan, Benjamin Smith Lyman, Henry Phillips, Jr., Philadelphia, Pa.; Enoch Pratt Free Library, Editor of *Journal of Philology*, Baltimore, Md.; Treasury Department, Lighthouse Board, Dr. Albert S. Gatschet, Washington, D. C.; University of California, Sacramento; State University of Iowa, Iowa City; Historical Society of the State of Montana, Helena; Agricultural Experiment Stations, Burlington, Vt., Amherst, Mass., Des Moines, Ia.

Dr. Charles S. Dolley read a paper on "The Thyrsus of Dionysos and the Palm Inflorescence of the Winged Figures of Assyrian Monuments."

This being the regular evening for balloting for candidates for membership, pending nominations Nos. 1235, 1251, 1252 and 1254 were read, spoken to and voted upon.

New nominations Nos. 1255 and 1256 were read.

Pending nomination No. 1249 was referred to Council.

Pending nominations Nos. 1250 and 1253 were postponed until May 19, in consequence of the absence of the proposers.

The Proceedings of the Board of Officers and Council were submitted, and under the call of New Business, were taken up and considered.

On motion, the resolution of Council suggesting the withdrawal of the deposits of the Society was made the special order for March 17.

The following preambles and resolution, offered by Dr. Rothrock, were adopted by the Society:

Whereas, The forests of Pennsylvania, which are of such vast importance to the future prosperity of the State, are being removed, and no serious attempt is being made towards their restoration; and,

Whereas, The problem growing out of this condition of affairs is a complicated one, for the solution of which, by wise legislation, sufficient information is not available; therefore, be it

Resolved, The American Philosophical Society respectfully requests the members of the Senate and House of Representatives to vote in favor of a bill entitled "An Act Relative to a Forestry Commission," which has been introduced into the House of Representatives of Pennsylvania by the Hon. D. Smith Talbot, of Chester county.

The ballots cast for candidates for membership having been counted, the Tellers reported the result to the Presiding Member, who declared the following gentlemen to have been duly elected members of the Society:

2210. M. Hippolite Taine, Menthone, Haute Savoie, France.
2211. Charles Schæffer, M.D., Philadelphia.
2212. Prof. George Lincoln Goodale, Cambridge, Mass.
2213. Hon. Robert E. Pattison, Harrisburg, Pa.

And the Society was adjourned by the Presiding Member.

Description of the Original Manuscript Journals and Field Notebooks of Lewis and Clark, on which was based Biddle's History of the Expedition of 1804-6, and which are now in the possession of the American Philosophical Society in Philadelphia.

By Dr. Elliott Coues, Washington, D. C.

(*Read before the American Philosophical Society, January 20, 1893.*)

It is well known that the *History of Lewis and Clark's Expedition* was written by Mr. Nicholas Biddle, of Philadelphia, and first published there in 1814, in two octavo volumes, by Bradford and Inskeep. It is also common report that the manuscripts of the famous explorers, upon which Mr. Biddle worked, are extant. But what these are, and where they are kept, few could have told.

All the Journals and Notebooks, in the handwritings respectively of Lewis and of Clark, upon which Mr. Biddle based his work, were deposited by him with the Philosophical Society in April, 1818. I have before me his original letter, of date April 6, 1818, making the deposit; also a copy of the receipt given by the Society. Both of these papers I owe to the kindness of Judge Craig Biddle, who also placed in my hands about fifty other documents, mainly Clark-Biddle correspondence relating to the preparation and publication of the work.

By the terms of this deposit, as accepted by the Philosophical Society, William Clark, his heirs or assigns, were and are always to have access to and use of these manuscripts for the preparation of any other edition of the work.

Mr. Jefferson K. Clark, of St. Louis, the only surviving son and heir of William Clark, very kindly furnished me with a letter to the Philosophical Society, desiring the manuscripts to be placed at my disposition for the preparation of the edition which I have now (Dec., 1892) in press.

I lately spent a week in the rooms of the Society, making there a preliminary study of the manuscripts, during which I was favored by Mr. Henry Phillips, Jr., the Secretary and Librarian, with every attention and facility. But finding it impossible to do the necessary work in the few days I could spend in Philadelphia, I preferred a formal request to be put in possession of the manuscripts for a limited period. By vote of the Society in open meeting, December 16, 1892, this request was granted, promptly and with great liberality; and the whole of the material thus passed into my hands.

Diligent and minute examination of these manuscripts satisfies me that their character should be made known, as a matter of great historic interest. Accordingly the present description is offered.

I will first describe the bound books and loose papers, just as I found them, in general terms; next, in terms of their several deposits—for there are more of them than Mr. Biddle deposited; and then I will give an

account of them in detail, as I have arranged them in a series of codices, which I call alphabetically Codex A, etc., to T.

I. The Books and Papers as Found.

Of four sorts: (1), (2), (3), three different styles of bound field Notebooks and Journals; (4), several lots of loose papers, mainly belonging with one of the styles of the bound volumes.

1. Thirteen (13) bound volumes, all alike, forming the most conspicuous part of the collection, and known since Biddle's time as "the red books." These are Journals and Notebooks of Lewis and of Clark, respectively, all in the handwriting of one or the other of the explorers. Eleven (11) of these are a part of the Biddle deposit; one (1) was deposited by Mr. Jefferson; one (1) is an unrecorded deposit. All are in remarkably good order, clean and sound inside and out; form oblong; back along short diameter, and as the pages were written on both sides, up and down, across the same diameter, the books open to and from the reader, not right and left; covers smooth bright *red* morocco, gilt-tooled edges, marbled inside, fastened at the fore end with brass clasps (now gone from eight of the volumes, intact on five of them); size of covers $8\frac{1}{8}$ x $5\frac{1}{8}$ inches (very nearly same size and shape as the leaves of the printed Philadelphia edition of 1814); paper about one quarter inch smaller each way than cover, or $7\frac{7}{8}$ x $4\frac{7}{8}$, rather thin, rough and tough, white (now with a slight brownish tinge), unruled; gathering supposed to be 76 folios or 152 pages in each book, exclusive of a pair of flyleaves marbled one side like inside of cover; but the number of leaves varies a little, and in several cases some leaves have been intentionally torn out—nowhere breaking the text, but to write something else on, or for another purpose. These books, as a whole, are written almost entirely full. Lewis' hand is particularly fine, fair and even; Clark's is larger, stronger and less regular; both are so good, and the pages are so perfectly preserved, that there is perhaps not a word, possibly not a letter, in the whole of these manuscripts not now distinctly legible. Seven (7) of these thirteen books are by Lewis alone; six (6) are by Clark alone. Eleven (11) are "Journals"—*i. e.*, narratives of the progress of the Expedition day by day, entered under consecutive dates. Two (2) are "Notebooks"—*i. e.*, miscellaneous entries, of various dates or none, of astronomical, geographical, ethnological, zoölogical, botanical, etc., items. In my arrangement these thirteen books become Codices D, E, F, G, H, I, J, K, L, M, N, O, P (see further on). With them belong more or less intimately certain parcels of loose sheets (see on).

2. One (1) bound volume, the "brown" book, standing alone. This is almost exactly the size, shape, etc., of the foregoing, but quite unlike them in appearance. It is bound in rough brown leather, sides and edges alike, not marbled inside; it is thicker than any of the other volumes, the paper being heavier and coarser; the leaves are 137, pages 274. This

is mainly a Journal, and mainly in Clark's hand, but with some entries by Lewis, and some by another hand. It includes the whole o. the wintering of the Expedition at Fort Mandan, and various other matters. For contents see beyond, Codex C, which this volume now forms.

3. Four (4) bound volumes, which may be called the "marble" books, from the style of their covers. Form oblong, like that of all the foregoing; size of covers $6\frac{3}{4}$ x 4 inches, leaves $6\frac{1}{2}$ x $3\frac{3}{4}$; paper rough, whitish, unruled; covers pasteboard, overlaid with marbled paper, back and corners of thin, smooth, brown leather. All in good order but one, which is worn and shabby; all written full, and perfectly legible throughout. The gathering of these four books is supposed to be 92 leaves or 184 pages; in one I find but 164 pages, though without any break in the text that I can discover. Two of these books are Clark's Journals, from the starting of the Expedition to October 3, 1804; the other two are Notebooks, chiefly natural history notes, by both Lewis and Clark. The four now form my Codices A, B and Q, R (see beyond).

4. Several parcels of loose sheets of manuscript, some in Lewis' hand, some in Clark's. Most of these papers are of the same size, shape and quality as the leaves of the red books, having been, in fact, taken from some of the latter, as may be seen by fitting the torn ends to the stubs remaining in the volumes. Those parcels which thus obviously belong to certain of the red books, or with the red books as a set, I have arranged as Codices Fa, Fb, Fc, Fd, Fe, La, Lb. One of the parcels is a different fragment, imperfect, once part of a Notebook, not found, like the small marble books; this is now Codex Ia. Two of the parcels belong with the small marble books, and thus become Codices Aa, Ba. Two remaining parcels, not directly connected with any of the bound volumes, are now Codices S, T. These manuscripts were all loose; as arranged they make twelve (12) parcels and as many codices, for the particular description of which see beyond.

The above are all the books and papers in my hands which are actual manuscripts of Lewis or of Clark. They are accompanied by Mr. Biddle's letter of deposit, and several memoranda concerning them, in Biddle's or another hand.

II. The Books and Papers as Deposited.

I do not find quite all of the Biddle deposit, as itemized in the receipt given him by the Society; for example, no vocabularies and no maps. The "Meteorological Register" he specifies is simply certain leaves detached from the red books, and thus already accounted for. All the loose manuscript above specified is supposed to be included in the Biddle deposit. But I find four books from other sources remaining to be accounted for. As to their deposits, therefore, the Lewis and Clark manuscripts fall into the following arrangement:

1. The Biddle deposit, fourteen bound volumes, viz.: Two of the four

small marble books; the one brown book; and eleven of the thirteen red books. With these belong all the loose papers, as above said.

2. The Jefferson deposit, consisting of three bound volumes. Two of these are small marble books, matching the other two deposited by Biddle. Each is by both Lewis and Clark, and each consists of miscellaneous field notes, mainly on zoölogy and botany. They now form Codices Q, R. The third volume is one of the red books. It is a Clark, and contains miscellaneous notes, chiefly on natural history. It is now Codex P. These three were deposited by Mr. Jefferson in November, 1817, as appears by memorandum in each of them, in Biddle's hand.

3. Unknown deposit: One of the thirteen red books, without record of source whence obtained. This is a Lewis, and consists of certain astronomical observations and geographical notes. It is now Codex O.

III. The Books and Papers as Arranged.

I have gone very carefully through these precious manuscripts, and arranged them in what appears to be their natural sequence or logical order. All the red books, making the bulk of the collection, fall easily together, preceded by two of the small marble books and by the brown book, followed by the other two small marble books, and the set of bound volumes is interspersed with the twelve parcels of unbound manuscripts which I have made up from the loose sheets, securely fastened in stiff paper covers, and for the most part interleaved with onion-skin writing paper. I have also paginated the whole of the manuscripts, which can now be cited by codex and page throughout, as if by volume and page of a published work. There is in all upward of 2,000 pages. Description in detail of the now thirty (30) codices here follows:

Codex A.—One of the four small marbled cover books. Biddle deposit No. 1. Clark's original No. 1. In good order. Folios 92, pages 184. Being Clark's Journal, complete, from May 13, 1804, to Aug. 14, 1804. This takes the Expedition from the 1803–4 winter camp on Du Bois or Wood river up the Missouri to the creek on which the Omahas resided (to p. 44, Vol. i, of the printed text).

Contents.—(1) Table of Missouri river distances up to Big Sioux river, canceled in red ink by Clark or by Biddle, inside front cover. (2) Memorandum of wintering, p. 1. (3) Memorandum of the country, p. 2. (4) Journal, May 13–Aug. 14, 1804, pp. 3–179. (5) Tables of latitudes, pp. 180, 181. (6) Astronomical observations, pp. 182, 183. (7) Memorandum of the badger, p. 184. (8) Astronomical observations, inside back cover.

Codex Aa.—Fragment. Biddle deposit. No number; collate with Clark Codex A. In good order. Folios 4, loose, torn from a book like one of the red books; 5½ pages written. Being Lewis' Journal, of dates May 20 and 15, 1804, covering starting of the Expedition, which Lewis joined at St. Charles on the 20th.

Contents.—(1) Blank, p. 1. (2) Entry May 20, 1804, pp. 2–6. (3) Entry May 15, 1804, pp. 6, 7. (4) Blank, p. 8 (memorandum in another hand, "Part of No. 1").

CODEX B.—One of the small marbled cover books. Biddle deposit No. 2. Clark's original No. 2. In good order. Folios 90, pages 180, counting front flyleaf; one leaf and the flyleaf gone at end, but no break in the MS., which continues on from p. 180 to inside of cover. Being CLARK'S Journal, complete, from Aug. 15, 1804, to Oct. 3, 1804. This takes the Expedition from the creek on which the Omahas resided to next day beyond Caution island (pp. 44–97 of Vol. i, of the printed text).

Contents.—(1) Blank, front flyleaf, p. 1. (2) Memorandum of Corvus bird, back of flyleaf, p. 2. (3) Journal as said, pp. 3–180, and on to inside back cover. (4) Memorandum of pay due men, inside back cover. Item, Clark's classification of Sioux tribes, pp. 56, 57. Item, description of the celebrated "fortification" on Bon Homme island, pp. 66–69 (but the sketch map of this natural formation is in Codex N, one of the red books, and only half of this was engraved for the copperplate facing printed p. 63, Vol. i).

CODEX Ba.—Fragment, torn from a book like one of the red books. Biddle deposit. No number; collate with Clark Codex B. In fair order; some corners gone; loose folios 4, pages 7½ written. Being LEWIS' Journal, Sept. 16 and 17, 1804, when the Expedition was at Corvus creek.

Contents.—(1) Two entries, at dates said, pp. 1–8; Corvus creek named; antelope described, etc. See printed text, pp. 72, 73 of Vol. i. (2) Memorandum in another hand, "This a part of No. 2," reversed on p. 8. The fragment ends in the middle of a sentence on middle of p. 8.

CODEX C.—The brown leather cover book above described, and which may be also known as "The Mandan Codex." Biddle deposit No. 3. Clark's No. 3. Biddle's No. 3. In perfect order. Folios 137, pages 274, and inside of both covers written over. Being CLARK'S Journal, complete, traversing dates Oct. 1–3, 1804, from Codex B, then of dates Oct. 4, 1804, to April 7, 1805, when the Expedition left Fort Mandan; LEWIS enters Feb. 3–13, 1805, when Clark was away on a hunt; another hand invoices, etc. This Journal covers route from Cheyenne river to the Mandans, and residence there.

Contents.—*A*. Reading forward: (1) Indian memorandum, inside front cover. (2) Botanical memorandum, lengthwise on p. 1. (3) Clark's Journal, Oct. 1, 1804, to Feb. 2, 1805, pp. 2–160. (4) Lewis' Journal, Feb. 3–13, 1805, pp. 160–174. (5) Clark's entries of his hunting trip, Feb. 3–13, 1805, pp. 174–177. (6) Clark's Journal, Feb. 14 to March 21, 1805, pp. 178–198. (7) Lewis' entry of March 16, 1805, pp. 199–202. (8) Clark's Journal, March 22 to April 7, 1805, pp. 202–214; blank p. 215. *B*. Reading backward: (9) Memorandum of British forts, inside back cover. (10) Baling invoice of sundries for Indian presents, stores, etc., by another hand, pp. 274–256. (11) Sketch map of Red and St. Peter's

rivers, p. 255. (12) Blank p. 254. (13) Summary statement of the rivers, etc., pp. 253–248. (14) Distances of sundry places up the Missouri to the Mandans, p. 247. (15) Weather diary, etc., Jan. 1, 1804, to April 7, 1805, pp. 248–216. (16) Blank p. 215.

Note.—This is one of the most important, as it is also the most miscellaneous, of all the codices. Both Lewis and Clark have a hand in it, as does also another person. The progress of the Expedition covered by it is as above said. It has all the matter of the residence at Fort Mandan. The Journal proper covers pp. 94–178 of Vol. i of the Biddle print, but the codex contains much other matter. Items (1), (2), (9) and (11) were not used by Biddle. Item (10) is a most elaborate invoice of the goods, stores, etc., summarized by Biddle, p. 2 of Vol. i. Item (8) gives on pp. 208–211 a detailed invoice of the natural history specimens, curiosities, etc., sent to Jefferson April 7, 1805. Item (13), the "Summary Statement," is *not* the original of that printed by Biddle, Vol. ii, p. 462 *seq.*, being an early rough draft of Clark's, afterward improved upon in another codex; and it also includes places and distances on the Missouri above the Mandans, and on the Yellowstone, from Indian information gathered before April 7, 1805. Item (15), the Weather Diary and Remarks, is the original of Biddle's print, Vol. ii, p. 476, to the date April 7, 1805, on p. 484, but the corresponding "Remarks and Reflections" of the Biddle print, pp. 495–505, are compiled only in part from this item, in part from another weather diary of same dates.

CODEX D.—One of the thirteen red morocco cover books. Biddle deposit. Biddle's No. 4. In perfect order, brass clasp half remaining. Cover clean and scarcely warped. Folios 70, pages 140, besides two flyleaves marbled one side like inside of covers; there should be folios 76, pages 152, but several leaves are torn out at end (these are preserved, being now part of Codex Fe, which see). This is LEWIS' Journal, complete, April 7, 1805, to May 23, 1805, from the Mandans to a little above Musselshell river, and *corresponding* in dates with Biddle's pp. 177–226 of Vol. i; but the printed text follows mainly a Clark Journal I have not found.*

Contents.—(1) Blank, marbled flyleaf and pp. 1, 2. (2) Journal as above said, pp. 3–139. (3) Page 140, reading backward, is the end of the remarks belonging to the weather diary for April to June, 1805, torn out and now a part of Codex Fe. The Journal itself is intact for the dates said. (4) Marbled flyleaf, blank, but for a penciled memorandum of mine to above effect.

CODEX E.—One of the thirteen red morocco cover books. Biddle deposit. Biddle's No. 5. In perfect order inside, brass clasp gone, covers clean, one of them creased crosswise. Folios 78, pages 156, and both

*One of Clark's Journals is now in the possession of his son, Mr. Jefferson K. Clark, of St. Louis. I am not informed of the dates covered by this volume, nor of the nature of its contents.

marbled flyleaves written over one side. Being LEWIS' Journal, complete, pp. 1–156, and both flies, May 24, 1805, to July 16, 1805, carrying the Expedition from North Mountain creek to the Gates of the Rocky Mountains, followed in the Biddle text, mainly, pp. 226–303 of Vol. i.

Contents.—(1) Text of Lewis' Journal as above sufficiently indicated. But also: (2) Colored sketch map of the Great Falls and Portage of the Missouri, pp. 132, 133. This sketch covers the Missouri from the cache near Portage creek up to above Smith's river, with Fort Mountain in the southwest corner; only about two-thirds of it was engraved for the plate facing p. 261, Vol. i, of the Biddle edition. The scale is "600 poles to the inch," much reduced in the copperplate as engraved.

CODEX F.—One of the thirteen red morocco cover books. Biddle deposit. Biddle's No. 6. In perfect order inside and out, except brass clasp gone. Folios 76, pages 152, and one side of both marbled flyleaves written over = pages 154; p. 153, on back fly, continued as p. 154 on front fly. Being LEWIS' Journal, complete and intact, July 17, 1805, to Aug. 22, 1805 (except Aug. 1–4), carrying the Expedition from the Gates to the Three Forks of the Missouri, thence up Jefferson river and over the Rocky Mountains to the Shoshone village; corresponding to pp. 303–398 of Vol. i, of the Biddle text.

Contents.—As above; no other matter. See Codex Fa.

CODEX Fa.—Fragment. Biddle deposit. No number. In perfect order. Folios 4, pages 8, loose sheets, written over 6½ pages, same paper as one of the red books. Being LEWIS' Journal, Aug. 1–4, 1805, but merely another narrative of those days, already fully written up at pp. 52–66 of Codex F, with which collate.

Contents.—As just said.

CODEX Fb.—Fragment. Biddle deposit. No number. In perfect order. Folios 13, pages 26, written 25¼, loose sheets, same paper as the red books. LEWIS' Journal, Aug. 23–26, 1805, therefore in direct continuation of Codex F. Text mainly the account of the Shoshone Indians as given in Biddle's Chap. xvi, Vol. i. The *dates* are included in Clark's Journal, Codex G.

Contents.—As above said. Verso of folio 13, p. 26, has inked memoranda: (1) "This comes into No. 7 [Codex G] between the 23d and 26th August, 1805," *i. e.*, put this account of the Shoshone Indians in text to be got from Clark's Journal of those dates. (2) "This has been copied from W. C. Journal and comes in as above in No. 7 [Codex G]."

CODEX Fc.—Fragment. Biddle deposit. No number. In perfect order. Folios 2, pages 4, full. Loose sheets, paper of the red books. LEWIS' Journal, Sept. 9 and 10, 1805, at and near Traveler's Rest creek. This codex comes after Codex Fb, but not connectedly. The dates are covered by Clark, Codex G.

Contents.—As above.

CODEX Fd.—Fragment. Biddle deposit. No number. In perfect order. Folios 4, pages 8, full. Loose sheets, paper of the red books. LEWIS' Journal, Sept. 18-22, 1805, Hungry creek, Chopunnish Indians, etc. Follows Codex Fc, but not connectedly. Dates covered by Clark, Codex G.

Contents.—As above. At end: (1) Memorandum, "This is a part of Book No. 7 [Codex G] to be referred to and examined after the 9th Sept., 1805.—W. C." (2) Memorandum, "Look forward 4 leaves," in Biddle's hand.

CODEX Fe.—Two fragments. Biddle deposit. No number. In perfect order. Folios $5 + 3 = 8$, pages $10 + 6 = 16$. Paper like that of the red books, from two of which these fragments have been torn. LEWIS' weather diary for April, May and June, 1805, and for July, Aug. and Sept., 1805.

Contents.—(1) April to June, 1805, 5 leaves belonging to Codex D (which see), as the torn ends of the sheets fit the stubs left in the book, p. 140 *seq.* These folios are in fact pp. 141–152 of Codex D, or reading backward, as the weather diary began at end of book, pp. 152–141, continued on to p. 140 of the book with remarks for June, 1805. (2) July to Sept., 1805, 3 leaves, likewise torn from one of the red books.

Note.—This codex is the basis of Biddle's meteorological tables, April 1 to Sept. 30, 1805, in Vol. ii, pp. 484–488, and of the "Remarks and Reflections" pertaining to these dates, pp. 503–508. By dates Codex Fe is to be collated with Codices D, E, F, G.

CODEX G.—One of the thirteen red morocco cover books. Biddle deposit. Clark's No. 5. Biddle's No. 7. In perfect order inside and out; brass clasp intact. Folios 76, pages 152, besides the marbled flyleaves, one of which is written on. CLARK'S Journal, complete, July 1, 1805, to Oct. 10, 1805, covering the whole of the route from White Bear islands, at the head of the Great Falls of the Missouri, to the mouth of the Kooskooskee or Clearwater river.

Contents.—(1) Certain distances and latitudes, p. 1 and overrun on front flyleaf. (2) Journal, dates as above, pp. 2–150. (3) Blank, pp. 151, 152, and back flyleaf. This narrative is the main basis of Biddle's pp. 289–end of Vol. i, though of course the parallel narrative of Lewis is collated in its proper connections. It is utilized by Biddle for the dates in which it laps back over Lewis Codex F.

CODEX H.—One of the thirteen red morocco cover books. Biddle deposit No. 8. No Clark number. In perfect order, inside and out; brass clasp intact. Folios 76, pages 152, besides back and front marbled flyleaves. CLARK'S Journal, complete, Oct. 11, 1805, to Nov. 19, 1805, going down "Lewis'" river and the Columbia to the mouth of the latter.

Contents.—(1) Biddle's memorandum for engraving plates, verso of front flyleaf. (2) Colored sketch map of Great Falls of the Columbia, scale 200 yards to the inch, p. 1 and overrunning on fly. (3) Colored

sketch map of Long and Short Narrows of the Columbia, continuously on pp. 2 and 3, scale 426 poles to the inch. (4) Colored sketch map of the Great Shoot or Rapid of the Columbia, same scale, p. 4. (5) Journal as above said, pp. 5–152, including colored sketch map of "Lewis'" river, etc., p. 33.

Note.—Codex H is main basis of Biddle, Vol. ii, pp. 1–81. Of the maps above said, only (2) and (4) were ever engraved. These form two of the three plates of Biddle's Vol. ii.

CODEX I.—One of the thirteen red morocco cover books. Biddle deposit No. 9. No Clark number. In perfect order, inside and out; only brass clasp gone. Folios 78, pages 156, besides the two marbled flyleaves. CLARK'S Journal, complete, Nov. 19, 1805 (directly continued from same date in Codex H) to Jan. 29, 1806, at and about the mouth of the Columbia and residence in Fort Clatsop, with various other matter, for which see contents following.

Contents.—A. Reading forward: (1) Blank, p. 1. (2) Estimated distances, etc., mouth of the Missouri to mouth of the Columbia, by the route the Expedition went out, pp. 2–12—*not* the basis, however, of the "Summary Statement" as printed. (3) Diary of the weather, etc., April, 1805, to Jan., 1806, pp. 13–33. (4) Journal, as above said, pp. 34–144. *B.* Reading backward: (5) List of traders visiting the Columbia, p. 156. (6) Estimate of the Western Indians, pp. 155–147, in the midst of which is (7) colored sketch map of the mouth of the Columbia, p. 152. (8) Three journal entries, Jan. 1–3, 1806, pp. 146, 145.

Note.—Codex I is the main basis of Biddle's printed text, Vol. ii, pp. 80–146, though of course with collation of Lewis' parallel narrative. The list of traders is on Biddle's p. 145. Biddle also uses the weather diary in one part, for the months not taken from Lewis. The sketch map forms the third of the copper plates of Biddle's Vol. ii. But the most important special matter in this Codex is the "Estimate of the Western Indians," an original basis of Biddle's pp. 471–476. The printed pages, however, do not follow this Clark Codex I, but are from some revised manuscript furnished by Clark.

CODEX Ia.—Fragment. Biddle deposit. No number. In perfect order. Folios 5, pages written 8; small paper like that of one of the small marble cover books. LEWIS' Journal, Nov. 29–Dec. 1, 1805, when he explored by himself a place on the S. W. side of the Columbia.

Contents.—(1) Entries Nov. 29 to Dec. 1, 1805, as above said, pp. 1–6, ending abruptly unfinished. (2) A very slight sketch map, Point Adams, p. 7. (3) Fragment of a botanical description, not connected with the rest of the text. (4) Label of the fragment in another hand, p. 8. Lewis' going and coming is noted in Biddle, p. 87 and p. 90, Vol. ii. The fragment should have extended to Dec. 5. Slight as it is, it is significant, as this was the trip on which Lewis discovered and determined upon the site for Fort Clatsop.

PROC. AMER. PHILOS. SOC. XXXI. 140. D. PRINTED MARCH 4, 1893.

CODEX J.—One of the thirteen red morocco cover books. Biddle deposit, No. 10. In perfect order inside and out, only clasp gone. Folios 76, pages 152, besides marbled flyleaves. LEWIS' Journal, complete, Jan. 1, 1806, to March 20, 1806, thus covering the residence of the party in Fort Clatsop. The manuscript is very close, clear and clean, and illustrated with numerous pen and ink sketches of Indian implements and utensils, birds, fishes, etc. There is a well-drawn head of the California condor, the white-fronted goose, and some full-length fishes, size of the page. We will specify this as "The Clatsop Codex."

Contents.—A. Reading forward: (1) Sketches, p. 1. (2) Journal as said, pp. 3–145. *B.* Reading backward: (3) Weather Diary, Jan. to March, 1806, pp. 152–145, meeting ending of Journal in the midst of the page. By dates the matter of this codex, as far as the Journal is concerned, is comprised between Biddle's pp. 103–147 of Vol ii.

CODEX K.—One of the thirteen red morocco books. Biddle deposit. Biddle's No. 10. In perfect order inside and out, only brass clasp gone. Folios 76, pages 152, and two marbled flyleaves. LEWIS' Journal, complete, March 21, 1806, to May 23, 1806, in direct continuation of Codex J, covering voyage up the Columbia and journey over the Bitter-root mountains.

Contents.—A. Reading forward: (1) Journal, as just said, pp. 1–147, includes a sketch map of the Multnomah river, p. 28. *B.* Reading backward: (2) Weather diary, April and May, 1806, pp. 152–147, meeting the Journal near bottom of the page.

Note.—The Journal of this codex, so far as it is utilized, makes Biddle's pp. 205–299 of Vol. ii.

CODEX L.—One of the thirteen red morocco cover books. Biddle deposit. Biddle's No. 12. In good order inside and out, brass clasp intact. Total folios 75, pages 150, inclusive of three folios I have fastened in where they belong, exclusive of the two marbled flyleaves, both written on one side. LEWIS' Journal, not complete, May 24, 1806, to Aug. 8, 1806, excepting July 5–14, which is Codex La, completing the Journal between dates said. This Codex L, together with La, covers the making of "Lewis and Clark's Pass," Lewis' exploration of Maria's river, and his Indian fight. It is continued by Lb, which see.

Contents.—(1) Astronomical memorandum, verso front fly. (2) Journal, May 24 to July 4, pp. 1–80. (3) Blank pp. 81–98, left so by Lewis to copy in here the Journal of July 5–14, which is now Codex La. (4) Journal, July 15 to Aug. 8, pp. 99–144, where text calls for a supplement, which supplement is my Codex Lb, Lewis' Journal, Aug. 9–12, 1806, and end of all his Journals. (5) Weather diary, June, July, Aug., 1806. (6) A memorandum of the traders Dickson and Hancock, on back flyleaf.

Note.—This codex, with its important belongings La and Lb, is the sole basis of Biddle's Vol. ii, pp. 332–365, relating to Lewis' party, at the dates said separated from Clark's.

CODEX La.—Fragment. Biddle deposit. No number. In poor order; one sheet in bad order. Sheets 4½, folios 9, pages 18, of a folded note-paper, not matching paper from any of the bound books, and one sheet not matching the rest. LEWIS' Journal, July 3–15, 1806, the making of "Lewis and Clark's Pass." We will call it "The Pass Codex."

Note.—This is by far the most important of all the fragments, and unhappily in the worst order of all the manuscripts. Sheet 1, folios 2, pages 4, is larger than the rest, thin and now very brittle. Having been handled and packed with smaller sheets, the edges are ragged, especially at bottom. The last line on each of the four pages was probably going in Biddle's time, for he has interlined some words that were then in danger of becoming illegible. Others that were only made out with difficulty when I got the manuscript I have interlined to like purpose; and certainly every word is saved. The top was in the same state, but has no lines so near the edge, and I have trimmed it smooth. This sheet is badly stained, also, perhaps from getting wet when Lewis forded a river with it in his pocket. The Pass is made July 7, at the bottom of p. 7 of this fragment. The MS. ends illegibly near the bottom of p. 18. Two other hands make a memorandum across the blank space, to the effect that this fragment belongs to Biddle's No. 12, my Codex L, where 10 folios were left blank by Lewis for its insertion, and where it should be carefully copied into the clean book.

CODEX Lb.—Fragment. Biddle deposit. No number. In good order. Folios 4, pages 7 written + 1 blank, paper like that of the red books. LEWIS' Journal, Aug. 9-12, 1806, and last; includes his being shot by Cruzatte.

Note.—Sole basis of Biddle's pp. 363–365, Vol. ii.

CODEX M.—One of the thirteen red morocco cover books. Biddle deposit. Biddle's No. 13. In perfect order inside and out, brass clasp intact. Folios 76, but pages 154, including one side of each marbled flyleaf. CLARK'S Journal, complete, June 7, 1806, to Aug. 14, 1806. Parallel narrative with Lewis' to July 3, when the party separated, then Clark's sole narrative of the journey from Traveler's Rest creek to the Jefferson river, making "Clark's Pass," thence down the Jefferson, up the Gallatin, over to the Yellowstone, and down this to its mouth, below which the separated parties reunited; also weather diary, June to Aug., 1806. This may be known as "The Yellowstone Codex."

Contents.—(1) Chopunnish Indian sketch map of various rivers, pp 1, 2. (2) Journal as said, pp. 3–145. (4) Weather diary, Aug., July and June, pp. 146–152, properly reading backwards. (5) Blank, p. 153. (6) Certain memoranda, p. 154 (back flyleaf).

Note.—The sketch map is that mentioned in Biddle, as drawn by Chopunnish Indians and copied on paper by Clark. It was never engraved. With Lewis' parallel narrative to July 3, this codex is the basis of Biddle, Vol. ii, pp. 309–332: then it is sole basis of pp. 366–404.

CODEX N.—One of the thirteen red morocco cover books. Biddle deposit. Biddle's No. 14, and last. In perfect order inside and out, only brass clasp gone. Folios 76, but pages 154, one side of both flyleaves being written over. CLARK'S Journal, complete, Aug. 15 to Sept. 26, 1806, and his last, bringing the reunited party down the Missouri to St. Louis; also various other matter (see contents).

Contents.—A. Reading forward: (1) Memorandum of articles forwarded from St. Louis to Louisville, Ky., pp. 1, 2 (one side of front fly and next page). (2) Journal as above said, pp. 3–78. (3) Blank, pp. 79, 80. (4) Sketch of the "Ancient fortification on Bon Homme island," pp. 81, 82; text to the same, pp. 83–85. (5) Blank, pp. 86–121. *B.* Reading backward: (6) Certain natural history notes, pp. 154, 153. (7) Weather diary, Sept., 1806, pp. 152, 151. (8) Important sketch map of the "River of the Road to Buffalo," locating "Lewis and Clark's Pass," etc., pp. 150, 149; never engraved. (9) Courses and distances from Traveler's Rest creek to the Great Falls of the Missouri, pp. 148–144. (10) Summary Statement of the Rivers, etc., "by Capts. Lewis and Clark," pp. 142–133. (11) Summary Statement of the Yellowstone distances, etc., pp. 132, 131. (12) Portage from the Yellowstone to the Three Forks of the Missouri, pp. 130, 129. (13) Various notes, pp. 128–122.

Note.—An important codex. As Lewis kept no Journal after Aug. 12, 1806, when he had been shot, the remainder of Biddle's Vol. ii is based on this codex, as far as p. 433, end of the History. "The Summary Statement," item (10) above, in Clark's hand, forms pp 462–470 of Biddle's appendix; it is printed almost word for word. Items (11), (12) and (13), however, were never printed.

CODEX O.—One of the thirteen red morocco books. No Biddle number. Not deposited by Biddle; perhaps by Jefferson; by whom unknown; not one of the regular series of Journals. In perfect order inside and out; brass clasp intact. Folios 64 only, pages 128 only, exclusive of the two flyleaves, probably up to the usual 72 folios, cut out of end. Text as far as it goes perfect and signed "Meriwether Lewis," showing end there. Whole MS. is in LEWIS' hand. The gone leaves were probably taken to be used for other writing, and their absence in no way affects what is in the book (see contents).

Contents.—(1) Entry "Camp ten miles above the mouth of the river Platte, July 22, 1804," p. 1, and following to p. 5 is description of the astronomical instruments used on the Expedition. (2) Astronomical observations for latitude and longitude, May 18, 1804, to March 30, 1805, pp. 6–52. (3) Blank, pp. 53–58. (4) Torn out, 4 folios, pp. 59–66, but no text broken. (5) Blank, pp. 67, 68. (6) Description of the Missouri and other rivers, etc, from the mouth of the Missouri to the Mandans, according to the observations of the Expedition, and beyond the Mandans upon Indian and other information, pp. 69–128. This is a connected general account, the original draft of which was doubtless written at Fort Mandan, winter of 1804–5, as text to accompany the map which was sent

thence to President Jefferson, April 7, 1805. Hence I infer that the substance of this codex was among the papers dispatched to the President at that date; but I have no record of how or when it came into the possession of the Philosophical Society. It does not seem to have been known to Biddle, or at any rate was not used by him in writing the history of the Expedition. (7) Torn out, p. 129 to end.

CODEX P.—One of the thirteen red morocco cover books. No Biddle number. Not one of the regular Journals. Jefferson deposit, Nov., 1817. In perfect order inside and out; only brass clasp gone. Folios only 68, pages 136, exclusive of two flyleaves written on; 4 folios = 8 pages gone, but no break in the manuscript. CLARK'S Natural History Notes, etc., April 9, 1805, to Feb. 17, 1806 (see contents).

Contents.—A. Reading forward: (1) Memorandum of weather, Feb. 28 to March 28, 1804, on front flyleaf and p. 1. (2) Memorandum of Jefferson's deposit of this Codex, in Biddle's hand, across p. 1. (3) Missing 4 leaves, pp. 3–10. (4) Blank, pp. 11, 12. (5) Numerous and various zoölogical and botanical notes, at entries of dates above said, pp. 13–124 (missing pp. 80–84). *B.* Reading backward: (6) Some money accounts, canceled, on one side of back flyleaf. (7) Blank, pp. 136–134. (8) Memorandum, p. 133. (9) Blank, p. 132. (10) Weather diary, July, Aug., Sept., 1805, pp. 131–125.

Note.—This codex is important in item (5), which is the main though not the sole basis of Biddle's natural history chapter vii, in Vol. ii. Some of this chapter is almost literally from this codex, but zoölogical and botanical matter from various other codices is there compiled. I may here give the simple explanation of the extreme meagreness and paucity of the natural history notes in Lewis and Clark, with the sole exception of what is in Chap. vii, Vol. ii. It was intended that Dr. B. S. Barton should work up the natural history in both branches, as stated by Biddle in the Preface which he allowed Paul Allen to sign. The codices (Journals) are everywhere rich in such materials—often giving elaborate descriptions of animals and plants which the printed text barely mentions. These manuscripts will doubtless suffice for the scientific identification of the objects described, in nearly all cases. But these passages are almost always canceled in red ink by Biddle or by Clark, with the remark, "Dr. Barton," "Copy for Dr. Barton," "Copied for Dr. Barton," etc., showing that the editor designedly passed them by for the purpose thus indicated. But Dr. Barton never did anything with this wealth of new material; his death occurred soon after the volumes were published, and nothing that I know of bearing on the zoölogy and botany of Lewis and Clark was ever found among his papers. Thus the whole intention miscarried; what little zoölogy was ever made out of the expedition was done by Wilson, Ord and Rafinesque, mainly, and what little botany, I think, by Pursh. In 1876 I worked out the mammals and birds as well as I could from the printed text of Chap. vii, Vol. ii.

CODEX Q.—One of the four small marbled cover books. No Biddle number. Jefferson deposit. In good order. Folios 92, pages 184. LEWIS and CLARK'S Miscellaneous Notes, chiefly on natural history, 1804–1806. A mate to Codex R (see contents).

Contents.—(1) Biddle's memorandum of Jefferson's deposit of this codex, inside front cover. (2) Blank, pp. 1, 2. (3) Lewis' natural history notes, pp. 4–24. (4) Blank, pp. 25–30. (5) Lewis' natural history notes, pp. 31–45. (6) Blank, pp. 46, 47. (7) Lewis' natural history notes, pp. 48–56. Lewis' notes run consecutively by dates, entries being from Aug. 2, 1804, to May 9, 1805. (8) Clark's natural history notes, pp. 57–181. Clark's notes are by dated entries, but in no consecutive order. (9) Blank, pp. 182–184.

Note.—This and R are the only codices of the whole series of which Lewis and Clark are joint authors—though Lewis has a few entries in Clark Codex C. I observe no marks by Biddle in the MS., and probably he did not use this codex at all. It has some valuable descriptions, found nowhere else, but on the whole is of much less importance to the naturalist than Codex P. It was long in Mr. Jefferson's hands, and deposited by him in Nov., 1817.

CODEX R.—One of the four small marbled cover books. No Biddle number. Jefferson deposit. Cover most worn of any of the books, and very shabby; inside sound and clean, except a torn flyleaf. Folios 82, pages 164. LEWIS and CLARK'S Miscellaneous Notes, chiefly on botany and zoölogy, May, 1804, to March, 1806. A mate to Codex Q (see contents).

Contents.—(1) Biddle's memorandum of Jefferson's deposit of the book, inside front cover. (2) Half of the same memorandum duplicated on the torn p. 2. (3) Blank, p. 3. (4) Lewis' Botanical Register; List of specimens of plants, Nos. 1–108, entered May 10, 1804, to Nov. 17, 1804, pp. 4–49. (5) Lewis' Zoölogical Notes, Fort Clatsop, Dec. 18, 1805, pp. 50–53. (6) Blank, pp. 54–58. (7) Clark's Botanical and Zoölogical Notes, Fort Clatsop, Feb. 18 to March 11, 1806, pp. 59–162. (8) A memorandum of "lava" by Lewis, p. 163. (9) Blank, p. 164. (10) Word "mineralogy," and memorandum of a bird, inside back cover.

Note.—The same remarks apply to this as to Codex Q.

CODEX S.—Fragment. Biddle deposit. Loose sheets 4 = folios 8 = pages 16, of notepaper, unlike the paper of any of the bound codices. In good order. LEWIS, Two letters of.

Contents.—(1) Letter to President Jefferson, dated St. Louis, Sept. 23, 1806, announcing the return of the Expedition. This is the rough original, full of interlineations and erasures, from which a fair copy was doubtless made and mailed to the President, Lewis retaining the present MS. It is of great historic interest as a curiosity, but of no special value otherwise. It is complete, with official signature and address; it makes 5½ folios, or 11 pages, the second letter being on the same *sheets* as the

first one, occupying the remaining 2½ folios, or 5 pages. (2) A letter, fragmentary, without signature or address, presumably intended for the President, in Lewis' hand, misdated St. Louis, Sept. 21 (probably meant for 24), 1806, and proceeding to give a general account of the Expedition, till it breaks off in the middle of a sentence at bottom of p. 16. It announces the discovery of the Yellow Rock or "Roghejone" river—that is, of the Yellowstone or Roche jaune.

CODEX T.—Fragment. No record or identification. One folio, 2 pages, apparently Clark's hand, but "Capt. Clark" spoken of in the third person. It is a half sheet of notepaper, not from any one of the bound books, and a mere excerpt, without proper beginning or end, speaking of some geographical and other matters of no special consequence.

Note to Codices A–T.—The four small marble cover codices, and the brown codex, were actually penned in the field, day by day, as the Expedition proceeded. So were some of the fragmentary codices, notably the "Pass Codex." But this cannot have been the case with the red books, nor with those of the fragmentary codices which are on paper of the same size, shape and quality as that of the red books. The covers are too fresh and bright, the paper too clean and sound, for these books to have ever been through the wear and tear of such a journey. The handwritings are too good, and too uniform, for either of the explorers to have executed them in the vicissitudes of the camp. The red books were certainly written after the return of the Expedition, and before Lewis' death in October, 1809—that is, in 1806–9. They were certainly put in Mr. Biddle's hands very early in 1810, and were probably written at St. Louis. I suppose the explorers bought a stock of these blank books, and proceeded to copy into them their Journals and Notes, from rough field-books like the marble ones and the brown one. They appear to have agreed upon a fair division of the work of authorship—each to write certain portions of the narrative, each in the first person singular speaking of the other in the third person, and each drawing what he wished from the rough field-books of both. They evidently intended to become the joint authors of their own Travels, though each should write certain portions himself. This design was frustrated by Lewis' untimely and tragic death; upon which Clark at once secured Mr. Biddle's invaluable services as editor and virtual author. But in making this explanation concerning the red books, I must not be misread as saying that they are not "original" manuscripts of Lewis and of Clark; simply that they are not books which were written in the field. Every word of them all is in the handwriting of one or the other of the explorers; they are original, they are genuine, and they are authentic.

With the foregoing codices, all "Lewis and Clark," are certain papers which need not be codified therewith, but which may be mentioned here. These are:

Paper 1.—Letter of Nicholas Biddle, in his handwriting, dated Philadelphia, April 6, 1818, addressed to Hon. William Tilghman, Chairman of

the Historical Committee of the Philosophical Society, making the deposit of fourteen of the volumes which form part of the above codices, etc.; 1 sheet letter paper, 2 folios, 4 pages, the last ½ blank, endorsed in another hand "received and read to the Historical Comme., April, 1818, see Minutes." It is an important record. I have also in hand (from Judge Craig Biddle) the rough draft whence this clean copy was made.

Paper 2.—A memorandum in Mr. Biddle's hand of Mr. Jefferson's deposit (Nov., 1817) of three bound volumes of the Lewis and Clark Journals and Notes. A mere slip of paper. I have added in my hand a memorandum of these volumes, which are above Codices P, Q, R, making with the fourteen bound volumes of the Biddle deposit, and one of the red books of unascertained deposit, the eighteen books—thirteen red, four marbled, one brown—which I received from the Philosophical Society, December 16, 1892.

Paper 3.—Another memorandum of these codices; a mere slip of paper serving as a label to the books when shelved.

Paper 4.—A memorandum of *intended* illustrations of the published volumes—four for Vol. i, three for Vol ii. But the engravings actually made do not agree with this memorandum. The paper is a mere slip, written one side, and was found pasted inside the cover of one of the red books.

Paper 5.—A blind memorandum, five items, headed "Papers, &c., of Capt. Lewis, &c." The items speak of "ten or twelve pocket vols., morocco bound;" of some natural history matter, "probably with Dr. Barton's books;" of certain vocabularies, ditto; of certain "observations of Lat. and Long.—of these probably Mr. Patterson knows something;" and of some maps "probably in the hands of the Publishers." It is a small square of letter paper, written one side, and rather a groping after something than any intelligible statement.

Paper 6.—Engraved copperplate of "The Fisher" or pekan, *Mustela pennanti*, perhaps having no connection with Lewis and Clark matters.

Note.—Mr. Biddle speaks in some of his letters of having had the original manuscript Journals of Sergeants Ordway and Gass. I find neither of these. His letter above cited, of April 6, 1818, speaks of the Ordway Journal as having been purchased from that person, and of Governor Clark's desiring, in letter of January 24, 1818, that it should be returned to him (Clark). I have no clue whatever to the Gass manuscript. The printed volume of Gass is of course well-known.

From the manuscripts above described it will be seen at once that the whole history of the Expedition might easily be reconstructed, if this were desirable. Mr. Biddle made a noble narrative, which has become a classic. The question, how closely he followed the original Journals and Note-books, has often been raised but never settled. It is now easy to see that

he wrote the whole work himself, nowhere following the actual words of the explorers themselves in his main text, though using tabular statistical matter literally in his Appendix. Had he done otherwise the world would have been treated to an unexampled curiosity in literature. Biddle's narrative should stand forever as the authentic History of the Expedition; but if the actual texts of Lewis and of Clark are ever published, they should be printed word for word, letter for letter, and point for point. This would make a wonderful book, and I am inclined to think it should be done; but no new editorial narrative need or should ever be made, nor should the Biddle text ever be tampered with. It may be annotated to any extent in the light of contemporaneous criticism, but should itself be left to stand, as a model of methodical, painstaking, precise and judicious editorship.

Judging from the Clark-Biddle correspondence, Mr. Biddle spent two or three years (1810–12) in writing the book, and about as much more time in superintending its publication, which was not finished till February, 1814. Sometimes he worked upon Lewis' manuscript, sometimes upon Clark's; oftener upon both, which he welded together into a third; the resulting text is altogether his, excepting in so far as it was mangled in the press. I presume Mr. Paul Allen is mainly responsible for the shocking punctuation and other errors of the published pages. He had absolutely no joint authorship with Mr. Biddle; he had not the shadow of a claim, that I can discover, to be even mentioned in connection with the work, much less to have his name put on the title-page; he was a mere hack, who received $500 for some alleged or perhaps imaginary services, not discernible in the light of history; even the Preface, signed "Paul Allen," is Mr. Biddle's; and the memoir of Lewis, ostensibly addressed to Mr. Allen, was secured by Mr. Biddle from Mr. Jefferson. I am utterly at a loss to imagine from what motive Mr. Biddle voluntarily relinquished to another the credit justly due to himself as the actual writer of an immortal book.

The only serious criticism of Mr. Biddle's most admirable performance, which examination of the original manuscripts induces me to venture, concerns the exclusion of all tabular matter from the body of his text. The manuscripts of both the explorers, and of Clark especially, are replete with astronomical observations for latitude and longitude, tabulated courses by points of the compass, bearings of prominent landmarks by the same, formally estimated distances, etc. These are of great intrinsic interest in meandering the Missouri and other rivers, and invaluable in tracking the routes of the explorers across the mountains. It is true that such things do not make easy reading, and perhaps the publisher objected; but the benefit to the student of Lewis and Clark that would have resulted from the publication of these data is simply incalculable.

PROC. AMER. PHILOS. SOC. XXXI. 140. E. PRINTED MARCH 2, 1893.

Vocabulary of the Kwakiutl Language.

By Dr. Franz Boas.

(*Read before the American Philosophical Society, November 18, 1892.*)

The Kwakiutl language is spoken on the coast of British Columbia, from Cape Mudge to Douglas and Gardner Channels, excluding Dean Inlet and Bentinck Arm, which are occupied by the Bilqula. The language forms a branch of the Wakashan stock, being affiliated with the Nootka or Aht of the west coast of Vancouver Island. The form of these languages reminds us in many respects of that of the Salishan stock, and it may be that a connection exists between both.

The Kwakiutl language is spoken in three dialects . the Kwakiutl proper, the Hēiltsuk· and the Gyit'amā't. The first is spoken by the tribes of Vancouver Island and of the coast southeast of Rivers Inlet ; the second by the tribes inhabiting the coast between Rivers Inlet and Gardner Channel ; the last in Gardner and Douglas Channels. It will be found that phonetics and vocabulary of the northern and southern tribes are much alike, while the middle dialect stands more apart. This is probably due to the admixture of Bilqula elements in the central region.

The vocabularies contained in the following pages were collected by the author in 1886, 1888, 1889, 1890. As slight differences are found between the vocabularies of the various tribes, the tribe from which the words were collected are given. The following abbreviations have been used :

L. for Lē'kwiltok·,	Kwakiutl Dialect.
N.—Nimkish,	
K.—Kwakiutl,	
Tl.—Tlatlasik·oala,	
A.—Awī'ky'ēnoq.	Hēiltsuk· Dialect.
H.—Hē'iltsuk·,	
G.—Gyit'amā't,	Gyit'amā't Dialect.

The literature of this language is very scanty. The following writings are of importance :

W. Fraser Tolmie and George M. Dawson, Comparative Vocabularies of the Indian Tribes of British Columbia. Montreal, 1884.

G. M. Dawson, Vocabulary in *Trans. Royal Soc. of Canada*, 1887, ii.

A. Hall, A Grammar of the Kwagiutl Language, *Trans. Royal Soc. of Canada*, 1888, ii, pp. 59-105.

F. Boas, "Grammatical Notes on the Kwakiutl Language," in the "Sixth Report of the Committee on the Northwestern Tribes of Canada," *Proc. British Association for the Advancement of Science*, 1890.

THE GOSPEL according to Saint John, translated into the Qāgūtl Language. London, 1884 (by Rev. A. F. HALL).

THE GOSPEL according to Saint Matthew, translated into the Qā gūtl (or Quoquols) Language. By Rev. A. F. HALL. London, 1882.

The following alphabet has been used; the vowels have their continental sounds:

â = *aw* in *law*.
E = *e* in *flower*.

Consonants.—The following consonants require a special description:

k', g',
k, g,
ky (kH), gy.

This is a series of k sounds beginning with the posterior guttural *k'*, passing through the ordinary *k* to the anterior palatal *ky*. There is a tendency in the Hëiltsuk' dialect to transform *ky* and *gy* into *k* and *g*. The distinction between sonans and media is here, as in many other Indian languages, exceedingly difficult, and it may be that to the Indian ear there is no real distinction between both classes. The same is true in the case of labials and dentals. *s* and *c* (= English *sh*) are evidently modifications of the same sound; *s* is always pronounced with open teeth and post-alveolar position of the tip of the tongue. Thus it obtains a similarity with *c*, while the latter partakes in the same way of the characteristics of *s*.

q, Q, H correspond to k, k, ky, the first being the German guttural *ch* in *ach*, the last the German palatal *ch* in *ich*, the Q an intermediate sound like *ch* in the Westphalian dialect.

The vowels of the Kwakiutl language are extremely variable, and I have not been able to ascertain satisfactorily the meaning of lengthening and shortening, of apparent contractions and diæresis. I had, therefore, to confine myself to give the various forms which I obtained from the Indians. We find a series of very indistinct vowels which are not articulated, but indicated by position of the mouth. The most frequent among these is *u* following a terminal *k*, for which I have used the sign '; for instance, in the passive participle —k'. In compounds, when a syllable follows the —k' the *u* is often articulated.

Pauses in words are very frequent, and are almost always accompanied by an increased stress of the preceding consonant. I have found it impossible in this language to distinguish clearly between consonants articulated with ordinary stress and increased stress, although the latter are undoubtedly found, *p. e.*, ky'ë, *no*.

VOCABULARY.

A.

to be able to compete with somebody, **N.** lā'kyusta (—usta, *up*); wī'-kyusta, *not to be able to get up against* (wī, *negation*; —usta, *up*) = *to rise opposite to somebody?*

about, —uili(la); **N.** tlē'kuilila, *moving about*; lâkuilila, *camping about, here and there* (lEk·u'la, *to camp*).

above, **N. L.** aikH, aikya; **H. G.** aikH; **N.** aikyak·au'ē, *uppermost* (—k·auē, *farthest in a certain direction*); **L.** ai'kyaqala, *from above* (—aqa, *down*; —la, *verb. suf.*); **L.** aikyak·E'mHît, *to look up* (—k·E'm, *surface of round thing* = *face*; — Hit, *v. a.*); tlāq-k·o-it aikH, *evening sky* = *red above*; **G.** au'kyoa, *upper side* (see *On top of*); **H.** mā'tea, *to fly above.*

to abuse one another, **H.** laa'lk·au.

to ache, **L.** ts'ē'Hila (see *Sick*).

across, **N.** —uitla(la); lā'lauitlala, or lā'laōtla, *always going across* (lā—, *to go*).

Adam's apple, **H.** k·'ôk·oqā'oa (—qāoa, *neck*).

adrift (see *On surface of water*).

adze, **H.** tlā'k·oabala (*same type as the Pacific Island adze*); towai'ū (*D-shaped handle with blade attached to its flat side*); tlē'q-kautl.

afraid, **N.** ky'ē'tlala; **L.** ky'ē'tlEn, *I am—*; **H.** wō'sE; wō'sEnō'gua, or lEnō'gua wō'silE, *I am—.*

to make afraid, **N.** ts'E'ntiyim; ts'E'ntikya, *to be—.*

after, behind, **N.** E'lEqtlē; lā'tlin, E'laqtlītl, *I will go after him.*

afternoon, **H.** tlkyā'qa.

again, **N.** hē't'ēt; ē'tēlis, *again in earth.*

ago, long ago, **L.** k·aiū'tlutl; **H.** k·aiū'tlutl'ats (—ats, *distant, invisible*).

agreeable noise, **H.** aikH'ē'kala (aikH, *good*; —kala, *noise*).

ahead, **N.** lalak·a, *to go ahead*; (lak·a, *to pass by, from*; la, *to go*; —k·a, *reaching*); Lā'la-k·ayū'k·oa, *name of female* = *made to go ahead.*

air, **H.** nā'la.

alder, **N.** tl'ā'k·ômis (tl'ā'k·ō, *red*; —mis, *tree*); **H. G.** tlā'k·ōtas (*from : red*).

alive, **N.** k·o'la; k·o'lasta, *water of life* (—sta, *water*).

all, **L.** k·'ā'lauē, **N.** nā'qua, **H.** āgy, **G.** wā'qau; *that is all*, **L.** lEm-k·oā'tla, **H.** au k·oā'tl.

alone, **N.** nā'nawa; nā'nawalaqisē'-aq'ēnoq, *one who wants to work alone*; **N.** nEmō'k' (nEm, *one*); NEmō'kuis, *the only one on earth*; NEmō'kyustâlis, *the only one who came up out of earth* (—usta, *up*; —lis, *ground*); NEmō'kua, *alone on rock* (—a, *stone, rock*); NEmō'kuak·amē, *all alone on rock* (—k·amē, *superlative*); NEmō'kuitsâlis, *alone on prairie* (—itsâlis, *flat open country*).

—— *to eat, drink, work alone*, **N.** na'qula.

along, **N.** —nta(la).

—— *long object*, **N.** —nūtsEntala (*along side of*); k ātsnūtsEntāla, *to walk along long object.*

—— *flat object*, **N.** —unqEntala (—inqē, *edge*); k ā'sEnqEntāla, *to walk along flat object*; **H.** tōnō'olsa, *to walk along plank.*

always, **N.** —tl; amā'qutatl, *always giving away coppers* (amā'qut, *to give away coppers*); hā'qk·olatl, *always giving away blankets* (ia'k·ola, *to give away blankets*); hamā'lagyilatl, *always giving away blankets* (mā'lē, *to distribute blankets*; —gyilis, *earth, always*); baqbaku'latl, *always eating human flesh* (baqbā'k', *eating human flesh*, from bEk', *man*).

—— **N.** gyilis, *literally: on earth*; hamā'lagyilatl, *always distributing blankets*; winā'lagyilis, *always fighting*; hamE'lagyilitlEn, *I eat always in house* (ham—, *to eat*; —itl, *in house*); hamE'lagyilisen, *I eat always on beach* (—is, *on beach*); Nū'tlk·alagyilis, *always acting foolishly*.

among, **N. H. G.** —ak·a; **N.** nEq'·ak·â'la, *to pull out of a bag*; doq'ok·â'la, *to look among* —; aiH'ak·â'la, *good among others*; wä'lak·a, *to lead Hamatsa around after Tsētsā'ēk·a*; **H.** lē'lt'ak·a, *to search among*; p'ēpēya'k·a, *to feel among*; **G.** du'mduk·ak·a, *to look everywhere among*.

ancestor, **N.** gyāHgyilā'itl = *first of house* (gyil, *first*; —itl, *house*).

anchor stone, **H.** k·aliā'ois (—is, *in water*); **G.** t'ayaqaī'ū.

to anchor; **L.** mō'koanut, *cast anchor!* (see *To tie*); **H.** tlE mē'H'·ēnEm, *to anchor*; **G.** t'ayaiā'q, *canoe is at anchor*.

to angle, **L.** tlā'k·a, k·'ē'ta, **H.** t'ōpha'; *to drop hook into water*, **L.** ts'E'qstEnta k·'ē'taiō.

angry, **L.** ē'En, **N** tlā'uis; tl'E'·tlEspis, *expert in anger* (—pis, *expert*); **H.** hai'lala (= *angry noise*; —ala, *noise*); hailalak·s, *angry noise woman* (—k·s, *female*).

animal, **H.** sisa'kwimis; *a certain* —, k·'ā'iskatō, *large ear* (k·'ā s, *large*; —atō, *ear*).

ankle, **L.** k·oā'tlk·ok·, **H.** k·ō'k·anūtl (*perhaps: foot side*), **G.** k·au'k·ōmatl.

antlers, **L. N. H.** wutlE'm.

anus, **L.** pō'laqstēe (—qstēe, *hind part of body*), **H.** amā'kyas.

apron, **L.** tsāp (*borrowed from Comox*), **G.** sE'paqstēya (—qstēya, *hind part of body*).

arm, **L. N.** ā'yasō, **H.** haiā'sō, **G.** hā'isō.

—— *above elbow*, **N. H.** ōqsiapē'; *skin of* —, **N.** tl'ētsēapē, **H.** k'uk'utsēā'pē.

armor made of wood or skin, **H.** pā'·k·aitEm.

armpits, **H.** dā'dōk·ola'tsē (—atsē, *receptacle*).

to arrange bed, **L.** hēitlā'lit; **H.** hailē'tlatl, *to make right*.

around, **N. H G.** —istā; **N.** āwī'sta *around a thing*; awistā'lis, hēistā'lis, *around the world*; lē'·istala, *to go around*; k·ā'ıstēstāla, *to walk around*; maqsistā'lisa, *making potlatch all around the world* (ma'qoa, *to give two blankets to each*; —lis, *earth*); **N.** NūtlEmistalitsE'mk·a, *woman made to go like a fool around the world* (nō'lō, nū'tlEm, *fool*; —ista, *around*; —lis, *earth*; —tsEm, *made to*; —k·a, *woman*), **H.** ōē'sta, *view*; d'oqsista'la, *to look around*; tōē'stala, *to go around*; gy'ēqse'stala, *to run around*; **G.** k·'ā'tsistala, *to walk around*.

to arrive, **L.** lamEn lā'kya, *I*—; **N.** lē'inтiH lā'kyaatla, *when I arrived*.

arrow, **L. N. H. W. G.** hā'ntlɛm; **H.** hā'ntlɛmpa, *arrow point* (—pa, *point*); hā'ntlɛma'tsĕ, *quiver* (—atsĕ, *receptacle*).
bird arrow, **N.** k·ō'lōk·oaiū.
arrow point, **H.** k·'ɛ'mkyim.
to ascend river in canoe, **H.** sīa'.
to ascend a mountain, **N.** lāgyustâ'la (la, *to go*; —usta, *up*; —la, *v. s.*), **H.** nā'qa.
to be ashamed, **L.** mā'qts'a.
ashes, **L.** k·onā'i, **H.** gunē'.
—— *white of wood*, **L.** k·oā'tlōpɛs, **H.** k·oā'tlōm.
—— *to roast in ashes*, **L.** ā'sa.
asked by everybody to give feast, **N.** wutlē't.
to assemble, **N.** hōk·ona'kula (—nakula, *motion*); hōqsta'la, *an assembly* (*crowd*) *running into water* (?) (—sta, *water*); kyi'mk·ona'kula (*used in songs only*).
assistant of Hawī'natl, **N.** nē'qatla, wā'tatla.
—— *Hamatsa*, **N.** sâ'latlila.
aunt, father's and mother's sister, **N. H.** anī's.
—— *uncle's wife*, **N.** āpā'tsō (*step-mother*).
autumn, **G.** gyā'lɛmgyilis (—gyilis, *earth*).
to awake, *v. n.*, **L.** ts'ī'nīt, **H.** ts'inī't.
—— *v. a.*, **H.** koia'.
axe, **L. N.** sōpai'ū (sōpa, *to hew with axe*; —aiū, *instrument*), **H.** k'ōkuna'kula (k'ō'koa, *to hew with axe*; —nakula, *motion*).
stone axe for war (*long, sharp stone fastened in a perforated handle*), **N.** nɛb'ai'ū.

B.

baby, **N.** wī'sa, **H.** qɛnū'q'ō, **G.** qābq (*from* qap'ē', *cradle* (?)).
back, **N.** —ikyĕ, —igya, **H. G.** —ēgya; **N.** awī'kyĕ, *back*; k·'ō'k·o-igya, *hunchbacked*; ɪs'i'lkigyila, *feathers on back* (—la, *v. s.*); moē'gyint, *to carry on back*; pɛnē'gyalitl, *to warm one's back*; nā'lagyiligya, *back of day of world* (—gyil—, *earth*); **H.** ōsk·amē'gya, *back* (—sk·am, *outside of round thing*); ts'ɛ'mtēgya, *dorsal fin*; k'u'tsɛmē'gya, *skin of back*; ōwē'gyatlkyā'nē, *back of hand* (—tlkyā'nē, —skyā'nē, *hand*); k'utstsē'gyatlkyā'nē, *skin of back of hand*; ōwī'gyatltsē'tsē, *instep* (—(tl)tsētsē, *foot*).
—— *support* (*lazy seat*), **N.** yi'mk·oas (—as, *place*).
bad, **L. N.** ia'qsum (i—, *negation*; —aih, *good*), **H.** iakh, **G.** iah; **N.** ia'qp'aqsta, *to speak bad of one* (—qsta, *mouth*); **G.** iakhe-k·ala, *bad noise* (—k·ala, *noise*).
bad tempered, **H.** tlhsa'la (—ala, *noise*).
bailer, **H.** qa'lgyilis.
bald headed (see *Bare*).
ba'qus (*season when no Tsētsā'ēk·a must be held*), **N.** ba'qus.
bare, **H.** tl'ōk·; tl'ōk·k·ea', *bare headed* (—k·ea, *head*); tl'ōk·u's, *country bare of plants* (—us, *outside*); tl'ōqsɛ'mla, *bare mountain* (—k·sɛm, *outside of round thing*; —la, *v. s.*).
bark of tree, **L.** qā'k·'um, **H.** qk'um.
—— *of cedar*, **N. Tl. H. W. G.** tɛna's, **H.** dā'deotl (?).
to bark, **L. N.** wō'koa, **H.** wā'kya; **L.** wō'kōq ta wa'tsĕ, *the dog barks*; **N.** wā'wakulitla, *barking in house* (—itl, *in house*).
barnacle, **L. N.** qā'ik·.
basket, **L.** lɛqā'; **N.** Lɛqlā'q (*a name*), *basket eater* (?).

basket, small, for fish, **N.** lā'laqam.
—— *large, for blankets*, **L.** tlā'pat, **H.** kn'ē'patsē (—atsē, *receptacle*).
—— *for fish and clams*, **H. G.** ts'ɛla'.
—— *for berries*, **H. W.** nanā'k·ɛm (nāk·a, *to drink, the basket is watertight*).
—— **L.** pē'kyoo.
bat, bak·'oalā'uē, *making sleepy, from* bā'k·'oɛtlɛla, *sleepy*.
baton, used in winter dance, **L. N.** t'a'miaiō, **H. W.** tlē'qēm; **N.** t'a'msala, *to beat time* (—ala, *noise of* (?); —sila, *to make* (?)); t'ā'miatsē, *master of batons*; t'a'miasilāla, *rhythm*; **H.** tlē'·qala, *to beat time*.
baton, **H.** hauā'qala (—ala, *noise*).
—— *of chief*, **Tl.** sik'a'kyanō, **H.** sī'kyak·ɛm.
bay, **L.** awētlē'sela, **N.** ō ɹtlalis (*perhaps only head of bay*), **H.** ōtsoi's.
beach, **N. L.** —is, —lis; **H. G.** —is, —lis; **L.** tlɛ'māis, *beach*; t'ā'tis, *lying on beach*; **N.** ōk·omā'lis, *face of beach* (—k·am, *facing*); d'apā'lis, *covered by tide* (d'apa, *to flood*); ha'lqsiualis, *killing on beach at mouth of river* (—siuaē, *river mouth*); **H.** ūwi's, *beach*; ai'kyitskolis, *flat beach* (āikɛ, *good*); hana'qtis gyi'loaq, *canoe is on beach* (han—, *hollow object, canoe*); **G.** wō'·qanuis, *beach*; goā'is, *to sit on beach*; aigyitsuī's, *flat beach* (aikɛ, *good*).
heavy beams supporting roof, parallel to ridge of house, **L** ky'ā'tēwan, **H.** k·'aqā'wa.
grizzly bear, **N. L. Tl. H.** nān; **N.** gyi'la; **G.** sāh; **N.** *Nuqnēmis name:* nē'nɛnk·as (= *bear woman*); nanis, *bear in bottom of sea* (—is, *in sea*); nanqa, *called bear* (—qa, *called*); na'ntsē, *great bear* (—tsē, *great*); na'nk·amā'lis, *bear facing beach or earth* (—k·am, *facing;* —lis, *beach*); na'nqtlō, *cinnamon bear*.
skin of grizzly bear, pas'ɛna'ē.
black bear, **L.** tlē, **N.** tlā'ē, **H.** tl'a, **G.** t'ē'hoa; **N.** *Nuqnēmis name:* tl'ē'tlēk·a, *bear woman*.
beard, chin, **L.** hapa'qstēya (hap—, *hair;* —qstē, *mouth*), **H.** hā'pɛhsia' (hap—, *hair;* —ɛhsia, *tooth*).
—— *moustache*, **L.** hapa'qstēya, **H.** hāpqtā'ē (—qtaē, *mouth*), **G.** hapɛqtē (—qtē, *mouth*).
to beat time, **N.** t'a'msɛla (see *Baton*).
—— *on beach at marriage ceremony*, **N.** tsā'qa.
beaver, **L. N.** ts'ā'oē, **Tl.** ts'ō'k·oa, ts'ā'ō, **H. G.** kolō'n (*borrowed from Bilqula*); **H. L. N.** ts'ā'eatsē, *young beaver* (—atsē, *young of* —); **N.** *Nuqnēmis names:* d'akyā'lis, hē'lumhɪtasōla.
bed, **L.** k·ē'nutl, **H.** k'oai', **G.** ku'l'·ilas (ku'l'itl, *to sleep*; —as, *place of*).
bedroom, **N.** gyīai'las, **H.** k'wē.
to beg, **N.** k·oē'k·oasa; k·oē'k·oasalatl, *beggar dance*.
behind, **N.** ōqtlē'ē; **L.** ōqtlaksī'tsē, *heels;* alqtlaē'istala, *coming around last;* **H.** —qtlē; wala'qtlēk·s, *youngest daughter;* d'ōk·'·oqtla'la, *to look back;* goa'qtlē, *to sit on hind part;* kōpaqtlā'ut, *to break off hind part;* **G.** d'ō'k·'oqtla, *to look back;* hā'mts'·aqtlēe, *rest of foot*.
to believe, **N.** nē'nky'ēk·ala.
Bellabella village, **H.** G·alts.
Bella Coola, **N. K. H.** Bi'lqula.

belly, **L.** tā'ikyē, **H.** tky'ē, **G.** tɛkɪɪ; **H.** k'utsēqtla'ēs, *skin of* —; tlō'qoaqtlali'sɛla, *sick in* —.

below, **N.** pɛ'n'a, **H.** ōa'poa, ēsa'poa; **G.** āu'apōa, **H.** hēsā'po-itl, *below in house;* wīwunk·'apo-is, *bottom of sea* (—wunk·, *edge;* —apoa, *below;* —is, *in sea*) (see *Under*).

below (*down river*), **N.** gua'ē (*also north*), gua'tsē.

belt of women, **L.** wusī'kyanɛm, **H.** wāh.

to bend with hammer, **H.** mōkpta'ut (mōkoa', *to strike with hammer*).

berries (*species unknown*), **Tl.** haiitlus; k·ē'qēlis; k·'ɛmk·oalē'; k·ē'sk·ēlē'q; k·oā'k·ugē'e; k·ō'qk·uls; nek·'utl; si'lɛm; waopa'litse; tlē'k·'um; tlinq; **L.** ts'ē'ɪhina; tsi'k·ctl.

black berries, **H.** ciā'k'unatl.

cranberries, **L.** tū'stak'a, **Tl.** tū'stik'ua.

huckleberries, **L.** k'oā'tɛm, **H.** koā'tɛm; **L.** k'oā'tlmis, — *bush;* k'oā'tqut, *eating* —.

salmonberries, **L.** k·'ɛ'mtsuk·, **A. H.** kau'lali; **H.** kau'tlila, *country full of berries.*

sallalberries, **N.** nɛqnā'k', *eating* —.

soapberries, **N. Tl.** nɛquski'n; **H.** nuqskh, *berry soup.*

dried berries, **L.** t'ē'k·a, **H.** lɛk·k.

to bewitch by putting clothing of a person in contact with a corpse, **N.** lā'pɛtantē, lā'pɛtanū.

—— *by putting clothing in a skull which is heated*, **N.** ē'k·a; *person who knows to do so*, ē'k·'ēnoq.

—— *to counteract the* ēk a, *by repeating the process*, **N.** dɛ'gyinta; dɛ'gyintɛēnoq, *person who knows to perform this act.*

bile, **H.** k·u'lɪhmas.

bill of bird, **H.** ū'itlpa (—itlpa, *nose*).

bird, **L.** ts'ēk, **H.** ts'ē'kō, **G.** ts'ēk'.

—— *humming bird*, **N.** k'waā'kumtē.

—— *meadow lark* (*Sturnella magna, neglecta*), tlɛ'ltsɛn, **N.** ōtsɛqtāla.

—— *warbler*, **N.** mā'mēma.

—— *Oregon junco* (*Junco hyemalis*), **N.** tsō'pamalē.

—— *Ampelis garrulus*, **N.** kyaā'kyētaqtlē.

—— *violet-green swallow* (*Tachycineta thalassina*), **N.** mā'matlēkya (mā'tlē, *to fly, flying around in short cuts*).

—— *Ammodramus sandwichensis*, **N.** k·'ē'qēgyila.

—— *chickadee* (*Parus rufescens*), **N.** tsōtsā'k·a.

—— *thrush* (*Hesperocichla nævia*), **N.** tsōp'alē.

—— *Merula migratoria propinqua*, **N.** k·ak·alā's.

—— *Zonotrichia cornata*, **N.** tsɛsk·oā'nē.

—— *snipe*, **N.** tɛā'tsatlkyawa.

—— *Bubo virginianus*, **N.** tɛ'ɪhtēhialētl, **H.** tɪhɪhnī.

—— *Nyctea*, **N.** ky'ā'sāqa.

—— *Nyctala acadica*, **N.** bɛkuē' (*soul, ghost*).

—— *screech owl* (*Megascops asio Kennicottii*), **N.** hōphōp, kyō'kyōkyō.

—— *flicker* (*Colaptes caper saturator*), **N.** gu'ltɛm.

—— *woodpecker* (*all kinds*), **N.** tlā'tlanaētl.

—— *kingfisher* (*Ceryle aloyon*), **N.** kyetelā'wē.

—— *Corvus caurinus*, **N.** kyiqēlā'k·a; *Nuqnēmis name:* ky'ā'nauēk·a; **Tl.** ts'eqsā'k·ē; *Nuqnēmis name:* khk·alā'k·a; **H.** kh'ā'k·a.

bird, blue jay, **N.** ku'ckuc.
—— *hawk (various kinds)*, **N.** mā'manē.
—— *eagle, bald and golden*, **N.** kuē'k', **H.** wīk', **G.** aiHstok·oē'oa.
—— *Swainson's hawk (Buteo Swainsoni)*, **N.** t'ōt'â'lōtl.
—— *red-tailed hawk (Buteo borealis calurus)*, **N.** â'ukoanē.
—— *fish hawk (Pandion haliætus, carolinensis)*, **N.** ts'ēHtsēk.
—— *sandpiper (Creunetes occidentalis)*, **N.** ts'EsQauē'k·'.
—— *Tringa alpina*, **N.** tsō'p'apa'lā.
—— *plover (Charadrius squatarola)*, **N.** tsō'tsEtsa.
—— *Ægialitis semipalmata*, **N.** k·a'l'ia.
—— *Limosa fedra*, **N.** k·oā'k·oak·um.
—— *pintail (Dafila acuta)*, **N.** wē'wapEs (—wap, *water*; —pEs, *expert = liking fresh water*).
—— *petrel (Oceanodroma furcata)*, **N.** k·oē'k·oēk·oē.
—— *gull*, **L.** ts'ā'ek·oaam, **N.** ts'ē'k·oa, **H.** ts'ē'kyēla'k·a; **N.** *Nuqnēmis name:* **N.** mā'tagyila (*making fly* (?)), tsE'nqk'aiō.
—— *Diomedea albatrus*, **N.** bā'tla.
—— *tern (Sterna paradisea)*, **N.** k·ā'k·'akyitawa, *biting off from man's head*; k·'ā'gyuk', *a piece bitten off*.
—— *Merganser serrator*, **N.** k·ōk·ō'os; *Nuqnēmis name:* k ōk·ō'ts'aqsmā'lak·a (*as mink's wife*); tlE'mk·ēu (= *gummy head*).
—— *coot (Oidemia perspicillata)*, lEk·ā'p'āla.
—— *scaup duck (Aythya marila nearctica)*, **N.** tsō'ts'EspEs.
—— *loon (Urinator Imber)*, **N.** qā'wē.
bird, Holboell's grebe, **N.** hā'masīlalis; *Nuqnēmis name:* hā'maqsta.
—— *horned grebe (Colymbus auritus)*, **N.** k·'au'tak.
—— *Brachyramphus maramoratus*, **N.** tegyē'gyila.
—— *Uria Grylle Californensis*, **N.** t'EnQ.
—— *cormorant (Phalacrocorax-pelagicus resplendens)*, **N.** lā'qlaq.
—— —— *(Phalacrocorax pelagicus robustus)*, **N.** tlō'panē; **Tl.** tlō'patl.
—— *Cepphus Columba*, **N.** tsē'ssa.
—— *gray-ruffed grouse (Bombosa umbellus umbelloides)*, **N.** kuku'mQ'a.
—— *Dendragapus obscurus fuliginosus)*, **N.** hō'mhōm.
—— *pigeon (Columba fasciata)*, **N.** hamō'.
—— *sandhill crane (Grus mexicana)*, **N.** atE'mkulē.
—— *blue heron (Ardea herodias)*, **N.** k·oā'k·'oānē.
—— *oyster catcher (Hæmatopus Bachmani)*, **N.** guē'guēguē.
—— *swan (Olor columbianus)*, **N.** k·ak·ā'uk·.
—— *snow goose (Chen hyberborea)*, **N.** tl'ē'staq.
—— *Anser albifrons Gambeli*, **N.** nE'lla.
—— *Branta nigricans*, **N.** nā'naqākEm.
—— *Branta Canadensis*, **N.** nEqā'k·.
—— *pelican*, **N.** hā'uQaukoā'yatl.
—— *Charitonetta albeola (male)*, **N.** tl'aā'tlē.
—— *Charitonetta albeola (female)*, **N.** HŪ'pē.
—— *Mallard duck (Anas boshas)*, **N.** tlā'tlky'ēū.
—— *Clangula hyemalis*, **N.** hahā'nē.
—— *harlequin duck*, **N.** mā'tsēna.

bird, golden eye (Glaucionetta clangula Americana), **N.** kutē'na.

—— *Spatula clypeata*, **N.** sisōk'ua.

—— *Oidemia Deglandi*, **N.** hōqupstâ'a, **Tl.** k·'amtsē'q.

—— *Urotrichus Gibsii*, **N.** gyā'gy'apes; *Nuqnēmis name:* hālamâ'lak·a.

—— *(species unknown)* **Tl.** tlE'stlEk·; tlā'tsem; mā'tsēnē; ky'ī'nōt, **H.** kūi'nk·; nēsnā'k·.

—— *fabulous birds*, **N.** hā'utlak·anus; mā'kēkyū, *said to make canoes in woods.*

to give birth to, **L.** mā'yōtlam, **H.** mā'yōtla.

biscuit, **N.** kwā'k'uqsEm; kwā'k'uq, *eating* —.

to bite, a piece bitten out, **N.** k·'agyuk' (k·'amgyuk' (?)).

black, **L.** ts'ō'tla, **H.** ts'ō'tla, **G.** ts'u'tlō.

bladder, **H.** te'qatsē (—atsē, *receptacle*)

—— *of fish*, **H.** wulē'tl.

blankets, all kinds of, when used, **L.** nE'q'unē, **H.** k·ō'tiH. **G.** tsatsāg·ō'ētl, **H.** —ōtl; **N.** alā'gyim, *skin* —; tlE'k·oqsEm, *martin* — (tlE'k·Ek·, *martin*); pElpElask·E'm, *mountain goat wool* — (p'ā'lEm, *wool of mountain goat*); k·'ā'sasqEm, *sea otter* — (k·'ā'sa, *sea otter*); tlō'qsEm, *red* — (tlāk·oa, *red*); k·'ō'tsEm, *black* — (*the ending common to these words is probably* —k·sEm, —sEm, —k·Em, *related to: outside of round object, in reference to their being put around the body*); k'utâ'otl, *skin* — (**H.** k'utsE, *skin*; **H.** —ōtl, *blanket*); gy'ō'paoas, *blanket made of yellow cedar bark;* ȝā'k·ēlak, *another style of the same.* **H.** mā'mstlk·ōtl, *martin* — (mEstlk·an, *martin*); ts'atsaqkō'tl, *mountain goat wool* — (ts'ak·, *mountain goat*); k·'ak·ā'sōtl, *sea otter* — (k·'asa, *sea otter*); tē'qsEm, *green* —; tlā'oqstō, *red* — (tlāk·oa, *red*); kye'lqsEm, *white* —; ā'mEsEm, *black* —; tsatsoa'la, *skin — for children;* yiqtu'mkEna, *Chilcat* — (yiq—, *dance*).

blankets, lying about, **L.** k·ui'lk·uēla, **H.** mā'mEtl.

—— *in potlatch*, **N.** iē'k·ala.

—— *tied around belly*, **L.** ȝā'qstaē (—qsta, *end of body*), **H.** sap'ā'qstēgyila (—qsta, *end of body;* —gyila, *to make*).

—— *to put on blanket*, **L.** k'ō'qotlsut (—ōtl, *out of* (?)).

—— *to take off blanket*, **L.** k'ō'qtsut (—tsoā, *in* (?)).

blind, **L.** p'ā'p'as, **H.** b'āk'.

block by means of which Hawī'na·atl is raised, **N.** k·ā'k·ēkyī.

blood, **L.** Elk. **N.** a'lg'um, **G.** bE'lHtlEm; **H.** a'lkoasa, *blood in body;* a'lHsimala, *blood on outside of something* (—sEm, *outside of round object;* —la, *v. s.*); a'lHokyanā'la, *blood on hand* (skyāna, *hand*).

to bleed, **L.** a'lH'uit, **H.** a'lkoa; **H.** a'lkuitlpa, *nose bleeds* (—itlpa, *nose*); a'lkmāla, *face bleeds* (—ma, *face;* —la, *v. s.*); aqa'lkus *blood on ground* (—us, *ground, outside, country*).

to blow fire, **L.** pū'quit.

to blow, whale, **N.** tlā'tla; Tlā'tlaēgyilis (*name of a woman*), *blowing on land* (—gyilis, *land*).

blue, **Tl.** tsā'ca, **H.** koā'yēlak·s, **G.** koilā'qstō.

board, made by means of wedges, **H.** hā'was (*also board of roof*).

—— *sawed*, **H.** kēqk· (kēqa, *to saw*).

body, **N.** ō'gwinē, **H.** ōkona' (*only surface of body*); **H.** k·EMEqā'-otlna, *left side;* hai'tlkotlna, *right side;* tlōqoana'la, *sick, sore all over.*

body, corpse, **H.** k·a'lkuis; k·a'lkuē, *drifting* (—ē, *on surface of water*); k·a'lkuntsis (—unts, (?); —is, *in sea*).

to boil, v. n., **L.** tlEma', **H.** tlEma', tlōo'm.

to bolt, **N.** ts'E'mk·oa.

bone, **L. W. G.** qāk; **L** hāk·'ō'poi, *sternum* (—pōē, *breast*); **H.** ts'-iō'poa, *sternum* (—poa, *breast*); k'ō'tsaqā'oa, *collarbone* (—qāoa, *neck*).

—— *of fish*, **L.** k·'ō'k·oaiō.

boom (*of canoe sail*), **L.** tsē'kyinū'-tlEmē (—nūtlEmē, *side of*), **N.** tsī'kyanqai'.

born (*perhaps: from beginning*), **N.** nū'tlamō, *born a fool* (nū'tlEm, *fool*); nō'k·amō, *born wise*, (nō'k·at, *wise*).

both, **N.H.** waqs; **N.** waqsE'nqē, *both sides* (—Enqē, *edge*); wa'qsEngilis, *somebody on each side of an object on beach;* waqsEmk·'a'-sEla, *to put into mouth from both sides;* waqsistaut, *to divide;* **H.** waqsōdE'toa, *both ears* (—Etoa, *ear*).

bottle made of kelp, kelp, **L. N. H.** wā'watē.

bottom of an object, **N.** ō'qstē, —qste; **L.** pō'laqstē, *anus;* sā'qstaē, *blanket tied around belly;* **H.** —stē (?); kyā'qtē, *notch of arrow* (= *notch in bottom*); sap'ā'qstē-gyila, *blanket tied around belly.*

bottom of sea, **N.** k·'atsī's (—is, *in water*), **H.** wīwu'nk·āpois, (—unk·, *edge;* —apoa, *under;* —is, *in water*).

bow, **L. N.** tlā'kuis, **H. G.** tlE'kuis.

bowstring, **H.** tlkuē'tsEm.

bow of canoe, **H.** tlē'tskina.

—— *man in bow of canoe*, **N.** ō'kyinē.

box, Indian, **L.** qE'tsEm (*borrowed from* Çatlōltg), **L. N. H.** gyi'-ltas.

box for blankets, **H.** pāk ēye'la, **G.**]āk·ea'la.

—— —— *grease*, **H.** tEnguā'tsē (—atsē, *receptacle*).

—— —— *blankets*, **H.** ky'E'lqsEma'-tsē (= *white blanket receptacle*).

—— *woman's working box*, **H.** ōkwal-ā'tsē (—ātsē, *receptacle*).

—— *for berries*, **A.** k·atlk·.

boy, **L. N.** gyinā'num (*child*), **H.** gāpqō' (*about twelve years old*).

bracelet of mountain goat horn, **N.** yē'k·wēkila, **L.** gy'ō'kula.

bracelet of copper, **Tl.** k·'oē'k·oē, **H.** ts'Ewā'ta.

braid, **L.** haē'qs!ō, **L.** k·'ā'tlēē.

brain, **L.** tlE'k·oa, **H.** tlqlk·oā'tsoa.

branch, **L.** wū'tlsā'nē, **H.** tl'Esna'.

to break, **L.** kyū'q'uit (see *To fight*), **N.** kyō'k·oa; kyō'qkyōk·oa'la, *noise of breaking* (—ala, *noise*); **H.** kōu'mEsiūt; kō'kumsia, *to break to pieces* (*reduplicated*); kōkoa-poa'lut, *to break by bending;* kōpaqtlā'ut, — *off hind part* (—qtlaē, *hind part*); koō'mpaūt, — *off point.*

—— *with hammer*, **H.** mu'qsiut, — *with one stroke;* mumu'qsia, *with many strokes.*

—— *coppers in potlatch*, **N.** laqs'E'nt; Lā'laqs'Ent'aiō, *means of breaking copper* (*a name*).

—— *I break it*, **N.** t'ap'ē'tEn.

breaker for cedar bark, **L.** kyā'ts'aiō, **A.** yitsai'ō, **H.** tlāna'kula (—nakula, *motion*) (*shape of the tapa beaters*), tss'oai'ō (*shape somewhat like a mincing knife without handle*).

breakers, **H.** kwē'ta.

breast, **L. N.** ōpō'ē, —pōē; **L.** hāk·'ō'poē, *breast bone*; **L.** nak·pō'ē, *stomach*; **N.** tlē'tsEpō'ē, *skin of —*; **H.** tqk·'āpoa', —poa; ts'iō'poa, *breast bone*; k'utsepō'a, *skin of —*; tlōqoapō'ala, *sick on —* (tlōqoala'sō, *sick in —*); **G.** tak·apō'a

breast, female, **L.** ts'ām, **H.** tsaa'm, **G.** dzām (see *To suck*).

breath, **N.** hā'asaē, **H.** hā'spiō; hā'sōt, *to breathe out*.

bride, **H.** qaē'il.

to bring back novice from woods by dancing, **N.** wutlā'qut.

broom, **H.** ky'alai'ō.

brother (said by male). **N.** nE'mwīut; *collectively:* nEnE'mwiutlâla, *brothers and male cousins*; nātlEmwī'ut, *relatives*; **H.** mEnū'ya; **G.** mEnē'suwa.

—— *said by female*, **N. H.** wā'k·oa.

—— *younger*, **L. N. H. G.** ts'ā'ya; *also: parent's younger brother's or sister's child.*

—— *younger, addressed*, **N.** wis.

—— *elder*, **N. H. G.** nō'la; *also: parent's elder brother's or sister's child.*

—— *elder, addressed*, **N.** gyī'E (see *Chief*).

brother-in-law (both kinds). **N.** k·olis, gyīi'mp; **H.** *also: sister in-law.*

brush, **H.** ky'ā'talō (=*paint instrument*).

bucket, **L.** nā'k·atsē (=*drink receptacle*), **H.** nā'k·Em (*from* nāk·a, *to drink*).

buttocks, **H.** mE'nkyatse.

to buy, **L.** kuī'lHoa, **H. G.** tlēa'; **H.** tlēā'nuq, *something that has been bought*; tlēi'lks, *storekeeper* (=*expert in buying*); tlēaē'les, *store* (= *buying house*); **G.** tl'ēla's, *store*; tl'ē'lgis, *storekeeper.*

by and by, **L.** k·oatlemā'stl.

C.

calf of leg, **H.** tl'ē'tl'ēkya (—ēkya, *leg below knee*).

to call, **L.** lā'k·oalasō; lamanqa lā'k·oa gyā'tlk·ē, *I call again.*

to call to feast, to invite, **N.** g·ē'la; tlatlig ēlā'lait, *every one calls him to feast.*

called, to call, **N.** —qa; quā'kunaqan, *I call canoe, i. e., I wish to buy a canoe* (quā'k'un, *canoe*); nānqa, *called bear.*

calm, **H.** k·auqk·ula; k·'au'k·o-is, *place where it is always calm.*

to camp, **N.** lEk·u'la; lā'k·uilila, *tribe always camping about.*

canoe, **L. N.** quā'k'un; quā'kunatl, *canoe that is going to be, i. e., that is making*; quā'qukunatsē, *large canoes*; quakunamEnē'q, *small canoes*; quā'kunatsEs, *fragments of canoe*; quā'quakuiala, *to look for a canoe wanting to buy it*; quā'kunaqan, *I call a canoe, i. e., wish to buy it*; **N.** gyā'lō (*obsolete*), **H.** gyi'l'oa, **G.** gyi'loa; **H.** gyil'oaai'asē, *place of canoe in woods*; gyi'l'okō'tlē, *broken canoe*; **N.** guī'tEs, ku'mtsala (?).

—— *Chinook canoe*, **L.** sE'qEm, **H.** sqam.

—— *war canoe*, **N.** d'aku'n.

—— *large war canoe*, **N.** mE'nk·a.

—— *Fort Rupert canoe*, **L.** quē'taqtla.

—— *Haida canoe*, **H.** hai'dats.

—— (*what kind* (?)), **L.** yā'atsē.

—— *legendary (folding)*, **N.** dā'tldatlta.

—— *in canoe*, **N.** ō'qsE; laqs, *to go*

into canoe (la—, *to go*); gyā'-qaqsala, *to come in canoe;* gua'-qsEla, *to sit in* —; mō'qsEla, *to load* —; **H.** lōpqs, *empty canoe* (lōp, *empty*); laqsut, *to load canoe* (la—, *to go;* —ut, *v. a*); goa'qs, *to sit in* —; **G.** laqs, *to go into* —; wā'mEqsūt, *to load* —; goa'qsala, *to sit in* —.

—— *lying on side,* **N.** k·ō'k·oatla; k·ōk·omā'lis, *canoe lying on side in front of beach.*

—— *adrift,* **H.** k·auk·oaHsela'k·tlē (—tlē, *on surface of sea*).

—— han—; *this stem probably means a hollow vessel* (see *Kettle*). *and is used in composition with local suffixes;* **N.** ha'nk·amlis, *canoe landing in front of beach* (—k·am, *in face of;* —lis, *beach*); hanHsī'waē, *canoe at mouth of river* (—siwaē, *river mouth*); hanuē'lagyitlē, *canoe is on water;* **H.** hana'qtis (gyi'-loaq), *canoe is on beach;* hanā'-eas gyi'loaq, *canoe is on water;* hanā'laktla, *canoe at anchor;* hanēā'sēs gyiloa, *place of canoes in forest;* **G.** hanēilwā'paqt, *canoe is on water.*

—— *place of — in forest,* **H.** tlq'-ēā'sē.

out of canoe, —otlt; **N.** gyaqotltâ'-lisaisus, *he brought one out of canoe to beach;* **G.** wā'mōtltut, *to unload.*

to make canoe, **H.** ā'tl'a; ā'tl'Eskīō, *canoe builder.*

cap, dancing —, **N.** ts'ē'qēoē (ts'ēk·—, *secrets, winter dance;* —ēoē—, *forehead*).

capable of —, **N.** ts'Es; d'ō'qɪs'Es, *seer;* **H.** —tEs; k·ā'waɪEs, *with good power of hearing.*

cape, **N.** wâqsâ, **H.** ōa'qsiwa.

to capsize, **L.** k·apā', **H.** k·paē'; k·pē'tla, *something turned upside down;* k·pē'tla·itl, *something turned upside down on floor.*

to take care of —, **N.** nā'qsila; tlā'-tlaqsila, *taking care of cedar-bark rings* (tlā'k·ok·, *cedar-bark ornament*); mā'menatsila, *taking care of drums* (?) (mEnā'tsē, *drum;* —ila, *to make; probably drum maker*).

to treat carefully, cautiously, **N.** mā'-yaHila.

something one does not care for, one does not want to keep, **N.** wā'iat (w—, *negation*).

cariboo, **H.** tl'aqt.

to carry in hand, **N.** dā'la, —Enk·-ula, mātsEmEnk·olawis, *always carrying two round ones in hand;* mamō'sk·amEnk·ola, *carrying four round ones in hand.*

to carry into house, **H.** laai'tla (la—, *to go;* —itl, *in house*).

to carry on back, **N.** mōē'gyint (—igya, *back*).

to carry load into canoe, **L.** mā'wa (see *To load*).

carrying something in mouth, **N.** tē'-kuqsta (—qsta, *mouth*); k·ē-tyeqstils, — *outside* (see *To bite,* —qsta, *mouth;* —ils, *outside*); k·ētyeqstā'litl, — *in house.*

to carry fire, **H.** pē'H'it (?).

to carve meat, **L.** k·ā'qit; k·oā'tlaiō, *carving knife.*

carved figure, **N.** ky'ēk·.

carving knife, **L.** k·ilk·uatlam, k·oā'-tlaiō, **H.** ky'ē'olEm.

cat, **L.** mā'matlis (see *European*), **H.** mâ'qoa.

cataract, **L.** tsE'qoaqala (—aqa, *down*), **H.** gy'ā'maɪsEn.

cat's cradle (*game*), **N.** ts'EtlɪsE'nu.

to catch salmon in net, **A.** tlakil, **H.** k'ō'koayōt.

cause of —, —im ; ia'kʜim, *cause of evil ;* ē'ikʜim, *cause of good ;* alē'tsim, *cause of being firm.*

cedar, **L.** tɛnā'smis (tɛ'nas, *cedar bark ;* —mis, *tree*), **A.** tɛ'nles, **H.** dē'was, **G.** koaqtlā'.

cedar bark ornament for winter dance, **N. H.** tl'ā'k·ōt (tlā'k·oa, *red = made red*).

chair, **H.** goā'ʜtɛma (goa—, *to sit*).

cheek, **N.** āu'tsē, **L.** ō'nutlɛmē (—nutl, *side of ;* —mē, *face*), **H.** ōwa'mia (—mia, *face*); **N.** t'ēkyu's, *mythical name of deer = strike face.*

to chew, **L.** mā'lekula, **H.** k'askyā'la (*gum and food = noise of chewing*), au'akō (*tobacco*).

chips, k'ōk'oakā'oa (k'ōk'oa, *to hew;* —āoa, *refuse*).

chief, **N. L.** gyī'k·amē (gyī, *elder brother, chief ;* —k·amē, *superlative*) ; gyē'qsɛm, *group of chiefs ;* **N.** hē'meskyas, *real chief (name of raven ;* —kyas, *real*) ; **A. H.** hēma's, *coll.* hē'mas, **G.** hai'mas.

chieftainess, chief's wife who gave her husband at time of marriage much valuable property, **N.** ō'ma ; ō'magyila, *to make —;* ō'mak·asɛmaē, *chieftainess in face of all ;* ōmaqtā'latlē, *chieftainess on sea* (?).

chief's wife who did not give her husband much property, **N.** mō'tsitl (*= keeping blankets from floor*).

chief's eldest son, **N.** tlɛō'lɛk·amē.

chief's daughter, **N.** ky'ē'tētl.

child, **N. L.** qōnū'k', *col.* gyi'ngyinam, **H.** qōnō'k', *col.* s'ā'sɛm, **G.** qōnū'q.

—— *eldest*, **L.** nō'lasnɛk·ɛmā'ē (nō'la, *elder brother ;* —k·amaē, *superlative*), **H.** nōla'k·amē.

—— *second*, **L.** k·â'yâē, **H.** qankē's.

—— *third*, **N.** g·au'i, **H.** g·auioaqtlē (—qtlē, *behind*).

—— *youngest*, **L.** tsa'inqē (tsa'ēa, *younger brother ;* —inqē, *edge of*), a'ma-inqē (ama—, *small*); **H.** wāla'qtlē, *youngest son* (—qtlē, *hind*) ; wala'qtlēk·s, *youngest daughter* (—k·s, *female*).

parents with children, **N.** gyinlī'kyɛlē.

chin, **L.** pɛ'nkyutaqstē (pɛn, *below ;* —kyut, *opposite;* —qstē, *mouth*), **H.** k·'oa'ʜ, **G.** gy'uq.

chisel, **L.** ky'ī'mtlaiō.

to chop, **L. N.** sō'pa ; **N.** sō'ps'al, *to chop in half in house ;* sōps'a'lsa, *— on beach ;* sōps'ali'sa, *to chop log on beach in half ;* sō'pɛtl'anē, *to chop in many places ;* sō'paiō, *adze = chopping instrument ;* **H.** k'ō'koa ; k'ō'konakula, *adze ;* k'ōk'oakā'oa, *chips.*

clams, **L.** kyā'ōēk·'anɛm ; *large —*, mat'ā'nē ; **N.** *clamshell*, gyō'gwis ; **H.** *clam*, ts'ē'koa ; *large —*, tsēma'nē.

a clean house, **N.** ku'mʜelalitl (—itl, *floor*).

to climb a tree, **N.** tl'ɛpa' ; — *a mountain*, tl'ɛpustâ'la (—ustâ, *up ;* —la, *v. s.*).

cloud, **L. H.** anū'ē ; **N.** a'nk·ola, *cloudy ;* A'nk·olayūk·oa, *female making cloudy weather ;* a'nk·oalagyilis, *country always cloudy.*

clover root, **N.** tliquē ; tliq·ī'waē, — *at mouth of river.*

club, fish —, **L.** t'ɛ'lusqān, **H.** hō'tl'ɛm.

—— *war* —, **N.** kuē'qaiō ; *to strike with* —, kuē'qa.

coal, **L.** ts'ō'tlna, **H.** ts'ō'tla.

coat, European, **L.** kipō' (*Chinook*), **N.** dā'datsowāk', **H.** d'ā'datsoa.
—— *old style*, **N.** tl'ᴇpē'tsâē.
cod, red, **L.** tlā'tlaqon (tlą'k·oa, *red*), **N.** nē'ts'ē, **H.** tlā'k·o-itk.
cod, black, **Tl.** t'ē'ɴa, **H.** hā'tanē.
cod, **Tl. H.** nā'tlᴇm, **L.** kyū'mak· (*borrowed from Çatlōllq*).
—— *sp.* (?), **H.** ɛītqta'la (—qta, *mouth*).
cold, **L.** wu'ta, **H.** t'ᴇnē'k', **G.** t'ᴇnē'q; **H.** kʜ'enē'ɛ, *to feel cold.*
collarbone, **H.** k'ōtsaqā'oa (—qā'oa, *neck*).
column, heraldic, **N.** mo'qpik· (mo'q—, *to tie*; —pik·, *pole*; *because blankets are tied to it*); **Tl. H.** ts'oā'qsē (—qsē, *outside*).
column, memorial, **H.** ālaqtlᴇ'n.
comb, **L.** qa'k·'ᴇm, **H.** gy'i'ngyanētl.
to comb, **L.** qā'k·a-it, **H.** gy'i'ngya.
to come, **N.** gyaq; gyaq'ōtltsoa, *to come out of*; ōmᴇn gyaqwuli'tla, *I come unasked*; k·antlō gyaqa'la, *when I come back* (*obsolete*); k·antlō gyaqē'tlētō, *when I come back*; alqtlaē'istala, *coming around last* (—qtla, *last*; —ēista, *around*); **H.** nōgua ā'k'ēla, *I come here.*
common man, **Tl. H.** qā'mala.
company, group, **H.** k·atē'tl, *col.* k·atk·atē'tl, **N.** —qsᴇm, gyē'qsᴇm, *group of chiefs*
companion of Hamats'a, **N.** sâ'latlila.
to conquer, **H.** ai'kʜoa; **L.** lamᴇn ai'kʜaumasē, *I — thee.*
constellations, **A.** kyai'utla, **A.** ali'qua.
to cook, **L.** mᴇtᴇ'lquit, **H.** a'mgyila.
copperplate, **L. N. A.** tlā'k·oa (= *red*); tlā'tlaqsᴇm, *small copperplates tied together* (—qsᴇm, *group of* —).
copperplate, woman for whom father plants copperplates in ground, **N.** ɛēpā'alētlilaok·.
corner, **H.** ōā'toa, p'ᴇsaai'; **N.** gcā'nē, *to sit in corner.*
to cough, **L.** lᴇqâ', **H.** lᴇqoa'.
council, **N.** k'uē'qala (—ala, *noise*); kuā'kunqs'ala, *to council*; **H.** hāsqta'la (—qta, *mouth*).
councillor, **N.** k'uē'qtᵻās; kuē'qalalagyilis, *councillor of his own country.*
to count, **N.** hō'sa; Hōsiā'lakyimō, *people counting objects thrown into water* (?) (—sta, *water*).
country, **L.** t'ᴇ'kya, **H.** tsqams (= *dirt*), —is; **N.** wī'nakuis, *country*; ōtsâ'lis, *flat country, prairie*; k·ā'lōkwis, *crooked country*; Gyinginā'mis, *children of earth = dwarfs*; —gyilis.
——, — *us* (see *Outside*), **H.** —us; tl'ō'k·us, *country bare of plants*; aq'a'lkus, *blood on ground*; k·'au'k ois, *place where it is always calm*; —ila, —gyila, *probably originally no local meaning* (see *To make*); k·a'mtlila, *country where deer are found*; waā'nēgyila, — *where herring are found*; ts'ā'k·gyila, — *where mountain goat are found* (*the meaning is probably: catching deer, herring, etc.*); —ēnoq, iukuē'noq, *windy place = knowing to blow*; **G.** —gyilis, gyā'lᴇmgyilis, *autumn.*
cousin, **N.** nᴇ'muōt; nᴇnᴇ'muiutâla, *cousins and brothers*; **N. L. H.** nō'la, *parent's elder brother's or sister's child = elder brother*; ts'ā'ea, *parent's younger brother's or sister's child = younger brother.*
cover, **H.** tāk k·; tak·k·ēā'la, *cover over head* (—k·ēa, *head*; —la,

v.); tā'k·umt, *to cover face with blanket.*

crab, **L. N.** k·'ō'mis (—is, *sea*); k·'ō'tsatsē, *young crab* (—tsatsē, *young*).

crack in dish, **H.** koēk·oatloa'la.

cradle, **L.** qaā'p, **A.** qap'ē', **G.** qābq, *infant.*

crazy, **N.** nō'ntsistatl; nōntsistā'latl, *dancing like a madman* (—latl, *dancing, acting*).

crooked, **L. N.** k ō'tlala; **N.** k·'ō'k·olgya, *with crooked back* (—lgya, *back*); k·ā'lōkwis, *crooked land*; k·autlanēā'la, *to walk crookedly.*

crossbeam over door of house, **H.** gaitsoa' (—tsoa, *inside*).

crown of head, **L.** ōqtlē'n, **H.** k·'ā'tsoak·ē'a (—k·ēa, *head*).

to cry, **L. N. G.** k·'oā'sa.

cup, **L.** koā'asta (—sta, *water*), **H.** nak·a'msta (nak·a, *to drink*; —sta, *water*), **G.** nak·ai'ū (= *drinking instrument*).

to cut, **N.** paqa'la, **L.** paq'it; **A.** k·oa'la paqa', *do not cut;* lā'qsa, *to cut up*; lā'qsɛnt'aē'noq, *one who knows to cut up*; **N.** sakwa', *to cut meat*; sakwa's, *place where meat is cut*; **H.** qta, qtltsiūt, qtlā'kyētsūt, *to carve game*; qō'tltsla, *to cut to pieces*; qtlptā'ut, *to make a cut in an object*; k'ōqskyana, *hand cut off* (—skyana, *hand*).

to cut tobacco, **L.** t'ō's'lt, **H.** t'ōs.

D.

dagger, long stone —, **H.** ts'ōai'ū.

Dā'gyulk·, **N.** *name of a place.*

to make a dam across a river, **N.** tsū'pa.

to dance, **L. N. H. G.** yiqoa'; **N.** yiqō'euē, *dancing cap* (—euē, *forehead*); **H.** yiqstē·kya, *dancing apron* (—ēkya, *leg below knee*); yii'qstēɪsītsē, —*leggins* (—sītsē, *foot*); yiqtu'mkēna, *Chilcat blanket*; **N.** kyi'lkyilnala, *dance at night when novice returns*; **N.** —latl, Tsō'nok·olatl, *dancing like Tsonok·oa*; **N.** ts'ā'ēk·a; **Tl. H.** ts'ētsā'ēk·a, *winter dance* (= *secrets*); ts'ē'tsēk·ā'laiū, *song used in winter dance* (—ala, *noise*; —aiū, *instrument*); ts'ē'qpēk·, *pole used in winter dance*; ts'ēqpēk·'ā'lagyilis, *dancing pole in earth*; **N.** d'ɛ'nts'ik·, *Sisiutl dancing pole*; **N.** tō'quit, *war dance* (**H.** *to walk*); **Tl.** nō'ntlɛm, *a winter dance* (= *foolish*); **Tl.** iā'tīati, *a summer dance*; **H.** tlōola'qa, *potlatch dance*; **N.** ba'qus, *time when no winter dances are held.*

dancing implements (*whistles and masks*), **N. H.** nau'alak·.

dancing apron, noise of —, **Tl.** ts'ōk·oa'la.

darling, **N.** ā'ta; *pet-daughter*, ā'tak·a.

daughter, second **H.** k'auīoa'qtlēk·s; *only* —, hāu'ldsēk·s (—k·s, *female*).

day, **N. L.** nā'la; nā'laqstāla, *having day in month* (—qsta, *month*); nālaqō'tau, *the sold day*; nā'lagyiligya, *back of day.*

daylight, **N.** hā'nitsum, **H.** ts'ɛ'lqait.

dead, **L. N. H. G.** tlɛl; **N.** —ōtlē, *dead, past, broken*; Tlatlēisilō'tlē, *the dead Tlatlēisitl*; **H.** —tē, ō'mptē, *the dead father.*

deaf, **L. N. H.** gu'lkum; **N.** gu'lkumqɛmtl, *mask of deaf man*; **H.** gulnk'ō'tatō, *deaf on one ear* (—atō, *ear*).

death, **N.** wānumgyila ; wā'lagyila, *making die* (*only in song*) (wē, *negation* (?) ; —gyila, *to make*).

decayed tooth, **Tl.** Nae'ɴsHE (—sHE, *tooth*).

deer, **L. N.** k·ē'was, t'ēkyu's (=*struck against cheek*), k·ē'-ɯustâla (*Nuqnēmis name*), **H. G.** k·ā'mēla ; k·ā'mtlila, *where always deer are found.*

Delphinus Orca, **L. N.** mā'q'ēnoq (=*pursuing secretly*), **A. H. G.** ha'lq'ēnoq (=*killer*).

dentalia, **N.** a'tlɛla.

to descend river, **H.** inā'tūsɛla (see *Fast* ; —tūsɛla, *down river*).

to descend mountain, **H.** kHinkqa.

to desire, **H.** mɛsɛla'.

to dip, **N.** tsē'H'it.

dirt=*earth*. **N.** d'ɛ'kya, **H.** tɛk·'um, **N.** nɛ'sa, tsɛ'sa.

dish of earthen ware, **H.** qa'lk·oa.

dish, small grease —, **N. H.** ts'ɛlā'-tsē, **G.** da'qtla.

—— *large*, **N.** tlō'k·oē.

to dive, **H.** tā's'it, tā'sela ; —*headlong*. **A.** tsastā'ak·a.

to divide, **N.** waqsi'stant (waq, *both*); **N.** mātls'alītla, *to divide in half in house* (mātl, *two* ; s'al, *in half* ; —ītl, *in house*).

dog, **L. N. Tl. H.** wa'tsē, **G.** wa'ts ; **N.** wā'sus, *eating dogs.*

dolphin, **Tl.** tistawu'lk.

do not! **N.** k·oa'la.

door, **L.** t'ɛ'Hila, **Tl.** t'ē'g·a, **H.** tl'-apɛ'm.

down, —aqa ; **N.** tē'k·aqala, *to drop* ; k·ā'sɛqala, *to walk down* ; nɛk·-ā'qala, *to beat time in slow measure* (= *straight down*); akyai'-aqala, *from above* ; **L.** tsɛ'qoa-qala, *cataract* ; Walas'aqa', *name of a dance* (= *great from above*); **H.** sōā'qot, *to take down*; Huē'tlaqals, *to fall down* ; Huē'-tlaqitl, *to fall down in house* ; lā'qa, *to go downward* ; tQ'oā'qa, *to jump down* ; d'ō'k·oaqala, *to look down* ; **G.** lā'qa, *to go downward* ; d'ō'k·oaqa, *to look down.*

to look down, **L.** pɛnk·ɛ'mHit (pɛn, *below* ; —k·ɛm, *outside of round thing* ; —Hit, *v. a.*).

down river —, **N. H. G.** —tus(ɛla) ; **N.** latū'sɛla, *canoe descends river* ; latusɛlā'gyilis, *to walk down river* (—gyilis, *land*), *sunrise* ; Hēitlatō'sɛla, *coming down river* (*name of K·ā'nigyilak' in* **L.**); **A.** toatusɛlā'gyilis, *sunrise* ; inā'tūsɛla, *canoe descends river* ; **G.** lā'tus, *to go down river.*

down (*feathers*), **H.** k·ōs.

to draw breath, **H.** tlHui't.

to dream, **H.** ky'ā'tlaē.

drifting at sea, **N.** tsē'tsa (*log of driftwood on which a person stands*); tsēHā'yō, *drifted out of river* ; **H.** p'uqola'k·tlē, *a log adrift* (—tlē, *on sea*); kHkiē'i, *many things adrift* (k·'al'nɛm, *many*); yā'k·oē, *driftwood adrift* ; yā'k·ois, *driftwood on beach* ; k·a'ikuē, *body adrift* (k·alk—, *body*); k·au'qo-it, *canoe drifts away.*

to drill, **H.** sɛlɛ'm.

to drink, **L.** nā'q'it ; **N.** nā'nak·a, *trying to drink* ; nāk'ɛ'lkun, *I — often* (—ɛlk, *expert* ; —un, *I*); nanik·a'matsa, *wanting to give every one to drink*; nā'k·atsē, *bucket*(—atsē, *receptacle*); **H.** nā'-k·a, *to drink* ; nāqps, nāk·ɛ'lk, *drunkard* (—qs, —ɛlk, *expert*); nak·a'msta, *cup* (—sta, *water*); nā'k·am, *bucket* ; nāɛā'k·ɛm, *watertight basket* ; **G.** nā'k·a, *to drink* ; nā'k·aiō, *bucket.*

drowned, **G.** p'ɛquē.

drum, **L. N. A. H. G.** mɛnā'tsē; **N.** mā'menatsila, *taking care of drums.*

drummer, **N.** ml'ɲila (= *striking*), **G.** miɲilis.

to dry salmon, **H.** kō'tl'a; kō'las, *where salmon are dried.*

drying frame, **H.** ka'l'iō.

dried salmon, **H.** qam'a's.

to dry, **N.** ts'ō'sa; ts'ō'tēt, *fish just beginning to get dry*; ts'ō'tɛmit, *coll.* ts'ō'ts'ōtɛm, *salmon, half dry*; **H.** ts'ō'sa, *dry*; tsō'sk·ēa, *to dry head* (—k·ēa, *head*); **G.** ts'ū'sa, *dry*; tsō'sɛms, *thirsty.*

to dry, **L.** lɛ'mɦuit.

dry, **L.** k'aqō'la.

dull, **L.** lē'ɪɦpa (= *bad point*), **G.** p'aspɛ'luqpa (—pa, *point*).

dwarfs, **N.** gyingyinā'nɛmis (= *children of country*).

E.

eagle, **L.** kū'ik, **H.** wīk'; wī'kuilak', *painted eagle* (—ilak', *made*).

—— *whiteheaded*, **N.** mō'mēqpa (mōk·oa, *white*; —pa, *point*).

ear, **L. N.** p'ɛ'spaya, **H. G.** p'ɛspē'yō; **N.** (awa)to'ē; ts'ɛnā'tōla, *ear is sick*; **H.** —atoa; waqsōdɛ'toa, *both ears*; k·oā'k·oatoa, *perforations of ears*; mō'koatō, *coll.* mū'mkoatō, *earring*; tl'ōqoatoā'lē, *ear is sick*; kulɦk'ō'tato, *deaf on one ear.*

earth, dirt, **L.** tsqɛms, **H.** tsqams, **N.** —is; **N.** hēistā'lis, *around the world* (—ēista, *around*); ē'tēlis, *again in earth*; nɛmō'kwitsâlis, *alone on flat ground*; —gyilis; knē'qalalagyilis, *councilor of his own country, of earth*; ā'nk·oalagyilis, *his land cloudy*; tlā'tlaēgyilis, *whale blowing on land*; ts'ēqpēk·'ā'lagyilis, *dancing around dancing pole in earth.*

east, **N.** mɛtla's (**L.** *southeast*), **H.** nɛlk'; **N.** mētlā'lanuk', *having east wind.*

to eat, **N.** ha'mɦ'īt; lɛmɛn ha'mɦ'īt hē'l'ēta, *I eat again*; hamɦ'ī'tɛn, *I am eating*; hamɦ'ī'tlɛn, *I am going to eat*; ha'msa, *to eat*; hā'maa, *trying to eat*; hamā'putlɛn, *I pretend to eat*; nā'quamkɦ hamā'pa, *all eat*; hā'mk·olisɛn, *I eat together with —*; hamaā'k', *eaten*; hamɛ'lk, *pl.* hɛhē'mɛlk, *eating much*; hamɛ'lkun, *I eat often*; (—ɛlk, *expert*); hamasaiā'lagyilis, *looking for food all over world*; hamɛ'lagyilitlɛn, *I eat continually in house*; **H.** ha'msa, *to eat*; ha'msps, ha'mtsilk, *eater*; hā'mats'a, *trying to eat*; hā'mɛɦ'it, *to take water and spit it out again*; hamasā'oa, *rests of food* (—āoa, *refuse*); **G.** ha'mspis, hamdzi'lɛk, *eater*; hamdzai'ō, *spoon*; ha'mstoa, *to eat walking*; ɦi'msɛla, *to know to eat*; ha'mts'aqtlēē, *rest of food*; hā'mts'ɪmas, *food.*

to eat meat, **N.** k·asā'; k·'ak·ēk·atsā'la, *always wanting to eat meat*; k·atsa'la, *sound produced by people eating meat*; **N.** wā'sus, *to eat dog flesh*; bɛqbā'k', *to eat human flesh*; baqbaku'latl, *always eating human flesh*; kwā'k'uq, *eating biscuit*; nɛqnā'k', *eating sallalberries*; lɛqlā'q, *basket eater* (?); g·oā'ɪg·ut, *eating huckleberries*; k·'ē'kyes, *to eat much* (k·'ē'nɛm, *much, many*; —es, *to partake of*); **G.** k'ā'ikɛs, *to eat much.*

ebbtide, **L.** g·ā'tsaqala, **H.** tl'ō'pɦ'īt.

eclipse of sun, N. ɒEk·E′k‘ (= *swallowed*).

egg, L. ts'ē′k'unō; N. ts'ē′kuat, *egg-island*; H. k'E′lqamīn.

edge, N. —nqē; mākyinqēlis, *at end of a row on beach*; gyō′q'ɛnqē, *house on edge*; k·āsɛnqɛntāla, *to walk along a plank*; ōqsɛ′-nqē, *one side of a flat object*; Nōmasɛ′nqēlis, *oldest of all*; wu′nqē, *edge of a flat object*; waqsɛ′nqē, *both sides*; wa′q-sɛnqēlis, *one on each side*; ama-i′nqē, *smallest* (= *small at edge*); H. tqu′neqaut, *to jump along*; wīwu′nk·'apois, *bottom of sea* (—apoa, *under*; —is, *in sea*); tsā′inqē, *youngest child* (ts'ā′ea, *younger brother*); G. wu′nk·q, *edge of flat object*.

eight, N. mā′tlguanatl, H. yū′-tquaus, G. yutqâ′s.

eighteen, N. mātlguanatlagyū, H. yukquau′sgyū, G. yūduqoās-gī′u.

eighty, H. yutqsūkaus, G. yūduq pɛnkyâ′sk·ā′pō.

elbow, H. G. tlā′koanē.

——*joint*, H. āaē′.

eleven, N. nɛ′māyū, H. mɛnē′egyū, G. na′qugī′u.

elk, L. tlō′ɛls; *Nuqnēmis name*: nɛnō′ɛlō (= *foolish*); H. tlaō′ls (—ls, *outside* (?)); G. wudzi′ɪh.

empty, L. lō′pitl, *empty house*; lō-pɪhēpitō, *you have no teeth in mouth* (—nē, tooth); H. lōpqs, — *canoe* (—qs, *in canoe*); lō′-pitl, — *house*; lō′pēs, *inside of man empty = hungry*; lōu′-mɪsoa, — *dish* (—tsoa, *inside*); lōpla′, *a hole, a piece missing*.

end of anything, N. mā′qpē.

enough, N. wī′k·asɛla, *not to have enough*; wē′k·'as, *idem* (wē, *negation*); wī′ɛmk·asɛla′sōqtis, *with which he was not satisfied* (*in song*).

to enslave, N. k·'ā′k·akwis (k·'ā′kyū, *slave*).

to enter, Tl. gya′qtsoa (gyaq—, *to come*; —tsoa, *into*); H. lā′tsoa (lā—, *to go*).

to be envied, N. hē′nakyala (—kyala, *noise*).

ermine, H. gy'i′lɛm.

European, G. H. k·'ōmɪhsī′ua (k·'ōm—, *rich*; —ɪhsīua, *at mouth of river*); H. k·'ōmɪhsīuakyala, *language of white man*.

evening, L. tsā′k·oa, G. p'ā′nequit.

to examine, H. d'ō′k·oa (see *To see*).

expert, N. —pɛs; tl'ɛ′tlɛspɛs, *angry*; lāqt'ōtpɛs, *expert in breaking coppers*; H. nāqps, *drunkard*; kōhpis, *sweating*; hamsps, *eater*; G. ha′mspis, *eater*.

——, —ɛlk, N. hamɛ′lk, *eater*; hamɛ′lkun, *I eat often*; H. nak·ɛ′lk, *drunkard*; ha′mtsilk, *eater*; G. hamdzi′lɛk, *eater*.

to extinguish, L. kɪ'i′lqīt, H. kɪ'i′lqa·

eye, L. N. k·ā′yak·s; k·ayak·ēsak·ōs, *thy eyes*; N. (ōstō′ē) *eye*; gyīs-tō′ē, *something in eye*; ēikɪ-sōqstō′ē, *with pretty eyes*; H. k·ks, *eye*; —qstoa; hā′paqstoa, *eyelashes* (hap—, *hair*); k'oa′-qstō, *one eyed*; bā′koanɛmqs-toa, *pupil of eye* (= *man in eye*); tl'ōqstoa′lē, *eye is sick*; wunk·'-ē′qstoa, *lower eyelid* (= *edge of eye*).

eyeball, L. k·ɛpɛlu′qstoē (—stoē, *eye*), H. k·ā′pɛlē′.

eyebrow, L. ā′an, H. aaini′ɪh, G. aa′nɪh.

eyelashes, L. hā′pēlik· (hap—, *hair*); hā′paqstoa (= *eye hair*).

eyelid, L. k·ɛpɛlu′qstoē (?) (—stoē, *eye*); H. ōwē′kyaɪltoa, *upper* —; wunk·'ē′qstoa, *lower* —.

F.

face, **L. H.** k·'ō'k·omē ; **L. N.** —mē, tl'ē'ꜱEmē. *skin of face* ; **L.** k·oatE'mēya, *scar on face* ; ō'nutlEmē, *cheek* (= *side of face*) ; mē'mꝛatlEmē, *two faces* ; **H.** —mē, —ma ; tl'ōqoma'lē, *face sick* ; k'u'ꜱmē, *skin of face* ; alk'mā'la, *face bleeds* ; ōwa'mia, *cheek* ; ts'ō'tsoqma, *to wash face* ; **G.** hāitlkyutEmē, *right side of face* (—kyut, *opposite*).

facing, **N.** —k·am ; ōk·amālis, *facing beach* ; ha'nk·amālis, *canoe in front of beach* ; ā'tlk·am, *hind side of man, box* (= *facing backward*) ; ā'tlk·amala, *house facing woods* ; Nā'nk·amālis, *bear facing world* ; kuā'k·amātla, *facing river mouth* ; k·ōk·ōmā'lis, *canoe lying on side in front of beach* ; **L.** tlask·amā'tlin, *I stand facing sea* (—tlē, *surface of water*) ; **H.** ōsk·amē'kya, *back* (—ēkya, *back*). See also **N.** sintlē'k·am, *face of Sintlaē* ; mIHstēk·E'mt, *to strike face. It would seem that* —mē *designates: face* ; —k·am, *an action performed with the face.* See also *Outside of round object.*

face, upper part of, **N.** —tEm ; gyi'lsgyiltEm, *the long-headed ones.*

to fall down from an elevated position, **H.** Huē'tlaqitl, — *in house* (—aqa, *down* ; —itl, *in house*) ; Huē'tlaqalꞵ, — *outside* (als, *outside*) ; Huē'tlta, *to fall into water.*

to fall, to roll down hill, **N.** k·'u'mHa ; k·'ōmEnē'tē, *explained as: everything falls upon him.*

to fall down (*walking*), **H.** kH'ā ins'ē'nEm.

to fall, **L.** kuī'Hals.

to fall (*tree*), **L.** tā'H'it, **H.** kuilā'q'it.

to fall to pieces, **N.** tlē'Ha.

to fall, **L.** tē'q'it ; tē'qtlala, *to fall into fire* (—qtlala, *flames*).

to fall into water, **L.** Elā'ts'ō.

river falls, **L.** kyō'tla.

family, **H.** manē'ma (see *Gens*).

famous, **N.** ts'ē'tloala ; K·ā'laitē (*name*), *explained as: famous.*

far, **N.** k·oē'k· ; **L.** k·oē'sala, *it is far* ; k·oē'k·sōt, *far away on other side* (—sōt, *on other side*) ; K·oē'k·sōt'ēnoq, *people on the far other side* ; k·oē'sōtE'nqēlis, *far other side, end of world* (—Enq, *edge* ; —lis, *land*) ; k·uī'sEtla, *to go far off* ; **H.** quē'sala, *far.*

farthest, **N.** —k·aua ; bē'benak·aua, *the lowest* ; ē'kyak·aua, *above* ; aōlak·oak·aua'sō, *speaking in lowest tones* ; nanō'ak·aua, *the wisest one.*

to fart (*said of male and female*), **H.** wa'qua.

fast, **N.** ī'Ha ; ī'Hak·amē, *the fastest one* ; wē'Hala, *slow* (wē—, *negation*) ; **G.** hā'lagyilis.

father, **N.** ōmp, **H.** āu'mp, **G.** âpf ; **N.** ō'mptē, *dead father* ; **N.** *addressed :* ā'ꜱ, âts ; *addressed by children :* dā'da.

father-in-law, mother-, son-, daughter-in-law, **L. N. H.** nEgu'mp.

fathom and subdivisions : fathom, **L.** pā'tl'it, **H.** pā'tl'a ; *one fathom*, ō'p'EnkH ; *two* —, mā'tlp'EnkH.

—— *left elbow to fingertip of right hand*, **H.** k·asēta'k·.

—— *left shoulder to fingertip of right hand*, **H.** asō'tqa-int.

—— *middle of chest to fingertip of right hand*, **H.** asō'd'apōt (—apoa, *breast*).

—— *right shoulder to fingertip of right hand*, **H.** k'ā'pōt

fawn of deer, **H.** d'ō'hē'wa.

to fear somebody, **N.** wa'lipolo.
feared, **N.** gyi'lEm; gyi'lEmkyaˢ, *the one really feared.*
to feast, **N.** k·uī'las; k·uī'lastEms, *place where feasts are regularly held*; k·ō'lsElas, *people going to a feast.*
—— *to give a feast*, **L.** tlē'la.
feathers, **N** k·a'mqua; k·a'mquaqstalis, *feathers on mouth on beach.*
—— **N. H.** ts'i'lkEm, *coll.* ts'Elts'E'lkH; ts'i'lkyEmpa, *feathers on top.*
—— *wing* —, **L.** p'E'tlEm.
to feel, **N. H.** p'ē'Hula; iā'kHis p'ē'Hula'sō, *bad to feel*; **H.** p'ēpēyo'k·a, *to feel among* (—ak·a, *among*).
to fell a tree, **H.** tlā'k·ama.
fellow, **L.** kyā'gyiqa (?); —lōt; **N.** gyō'uklōt, *tribe* (= *village fellows*).
fern, **L.** sā'kuam (*Pteris aquilina*); —*root*, **L.** sā'kum.
—— **H.** k·ē'stEm.
to fetch fire, **L. A.** ā'noa; **L.** acanoā'tlEn, *I am going to* —; **L.** anē'k·a, *to fetch fuel.*
few, **L.** hō'latlpetā'ō(—pētāō *small*).
to fight, to make war, **N.** qō'mEtlEla.
to fight, **L.** kHū'q'uit.
—— *against each other*, **H.** ts'ē'katla.
—— *always fighting*, wiLā'lagyilis.
—— *fighting place*, lā'k·oqtEms.
fin of whale, **L.** tlā'kya (—ēgya, *back*).
—— *dorsal fin of fish*, **H.** ts'E'mtēgya (—ēgya, *back*).
—— *anal* —, **H.** tEmtEmua'tsē.
—— *pectoral* —, **H.** k'a'lk'alk·Em.
to find something unexpectedly, **N. H.** tlō'k·oala; *this term is used especially for meeting a supernatural being*; tlō'k·oē, *what is found unexpectedly.*
to find while walking, **N.** k·'āk·askyinā'la (see *To walk*); *in songs*: tayukuinā'la.
hand and fingers, **L.** k·oa'k·oaqtsanē (—tsanē, *hand*), **H.** k·ā'k·oaqskyā'nē (—skyānē, *hand*), **G.** HiHnaqsky'ā'lē (—sky'ānē, *hand*).
first finger, **L.** ts'ē'mala, **H.G.** ts'Em.
second —, **L.** nō'la (=*elder brother*), **H.** k·'ōm, **G.** k·'ā'qtē.
third —, **L.** ·ā'lt'aq, **H.** ssā'lō, **G.** sā'lē.
fourth —, **L.** kH'ēt, **H.** kH'ē'ta, **G.** kyida'.
finger ring, **L.** k·ē'k·atEqtlē, **G.** k ē k·Etgyā'nē.
fir, **L.** iaiaqpā'lamis (—mis, *tree*), **H.** anē'oas (=*fuel* (?)).
fire, **N.** Hē'k·ala; nēk·alā'la ni'kyē, *mountain is on fire*; **L. N.** lE'k ōitl, *fire in house*; —qtlala, *fire, flames*; ō'qtlala, *flames*; tu'qtlala, *to jump into fire*; l.ānHtlala, *kettle on fire* (han—, *vessel*); k·aHtlalatsē, *great fire* (k·aī, *much*; —tsē, *large*); tē'qtlala, *to fall into fire*; **H.** Qui'ltEla, *fire*; lEguī'las, *fireplace* (—il, *in house*; —as, *place*); tQtlā'lis, *to jump into fire*; **G.** Qulik·ā'gē, *fire*; k·aiHtlala, *large fire*; tQtlā'la, *to jump into fire*; Qu'ltQulta, *lightning*; kHa'ktlalōda'tsē, *kettle* (—atsē, *receptacle*).
fire drill, **L.** ā'nEk', **A.** anō'kH, **H.** anō'k.
base of fire drill, **H.** aɻō'k (*used with ear wax*).
firm, immovable, **N.** a'latlē; alē'ɛ, *immovable in ground*; alē'tl—, *in house*; alē'tsEm, *firmness.*
first, **N.** gyil; gyilgyilā'itl, *ancestor* (=*first of house*); gyā'lamustâ'la, *salmon beginning first to ascend the river*; **H.** gyā'la; gya'lH'it, *first time.*

fish, **H.** mā'gyīlis (see meā', *salmon*; —gyīlis, *earth* = *all*).
—— *sp* (?), **Tl.** t'ō'tōp.
—— *sp* (?), **Tl.** qō'ltsus.
fishline, **L.** k·'ālk·, **H.** k'unE'm.
—— *for deep sea*, **L.** mak·ā'noē, **H.** mE'lEk.
fist, **L.** k·'oē'k·otsE'maē.
five, **N. H.** sky'a, **G.** sikyō'q; — *round objects* sikya'sk·Em; — *long objects*, sikyātsq.
fifteen, **N. H.** sky'a'gyū, **G.** sikyagū'u.
fifty, **H.** sky'ā'ksuk, **G.** sikyapenk·'·ā'pōpena
flagstaff, **N.** sEntlē'p'iq (—p'iq, *pole*).
flat land, **N. A.** ōtsâ'lis, **N.** NEmōkuistâ'lis, *alone on flat, open land*.
flee, **L. H.** tōpēatsē.
floodtide, **L.** lū'nak·on, **H.** īq'oīt.
to flood, **N.** d'a'ɬā; d'apalī's, *covered by tide*; d'apE'ls, *to flood ground outside of house*.
floor of house, **N.** —ītl, **H.** wīl.
flower, **L.** k·oā'san.
—— *sp.* (?), *a white* —, **H.** k·oī'k.
—— *sp.* (?), *red and blue* —, **H.** mats'ē'k·ola.
to fly, **L.** tlanā'k·ua, **H.** mā'lEla; mā'lēa, *to fly above something*; mā'taput, *to fly below* (—poa, *below*); mā'tlmatEm, *wings*.
foam, **N.** aā'owē; ā'watsē, *large foam* (*name of a place*).
fog, **L.** p'E'lqEla, **H.** ā'nk·oala, **G.** a'nq'ank·oē (see *Cloud*).
food, **H.** hā'mts'imas (ham—, *to eat*); hā'mts'aqtlē'e, *rest of food*.
foolish, **L.** nEnō'lō, **N.** nō'ntlEm, nEnō'lō; nōlō'k·amē, *greatest fool* (*mythical name of porcupine*); Nōlōyūēgyīlis, *fool in middle of canoe on earth*; NūtlemistalitsE'mk·a, *female, all around foolishness* (—ista, *around*; —tsEm, —*ness*; —k·a, *female* = *male to walk around everywhere like a fool*); Nūtlk·alagyīlis, *always acting like a fool*; Nūtlnūtlelī'kya, *highest of all fools*; Nū'tlatla, *similar to a fool*; Nū'tlamō, *born a fool*; Nō'ntlEmgyīla, *making foolish*.
foot and leg below knee, **N.** gyūkoiū', **L.** gyū'koaē, **H.** kō'kuē', **G.** gyū'gōē.
—— **N. H. G.** (ōq)sī'tsē; ō'patsētsē, *foot of an object*; **L.** ts'ōqtsōqsī'tsē, *hoofs*; ōqtlaksī'tsē, *heel*; **H.** amEa'tltsītsē, *skin of heels*; yū'qstēHsītsē, *dancing leggins*; k·uk'utsī'tsa, *skin of feet*; **G.** dzūqdzuqdzītsa, *dancing leggins*.
forehead, **N.** —ēoē, **L.** ō'kwēoē, *forehead*; aikyā'oē (= *good forehead*); k·oatsē'oē, *scar on forehead*; ts'ēqē'oē, *dancing cap* (ts'ēk·a, *secrets*); **Tl.** yiqō'ēoē, *dancing cap*; tl'ēsī'oē, *skin of* —; tlī'sioaē, *wolf's head mask for Tlokoala*; ōkū'latlē, *forehead on sea* (—tlē, *on sea*); **H. G.** tak·ē-ioa', *forehead*; **H.** k·'ā'kēioa, *glabella* (= *notch in forehead*(?)); qapē'ioa, *head presser* (qapē, *cradle*); tl'ā'k·oēioa, *headring of cedar bark* (tl'āk·ok·, *red*); tlōqēioa'la, *forehead is sick*.
forest, **L.** ā'tlEn (= *inland, behind*), **H.** k·ā's.
foundation, **N.** ky'ā'k·atla; ky'ā'k·a, — *on stone* (—a, *stone*); ky'ā'k·is, *house founded in water* (—is, *in water*), *pile dwelling*.
to founder, **L.** wuns'it.
four, **N. H.** mū, **G.** mūq.
fourteen, **N. H.** mū'agyū, **G.** mūagī'u.

forty, **H.** mōk·suk, **G.** mōpEn k·'ā'-pōpEna, **N.** Mamō'sk·amEE'n-koa, *carrying four round ones.*

fox, white-tailed (?), **H.** mōk·'uqt (mō'k·oa, *white;* —qt, *end of body*).

fragment, **N.** —tsEs; quā'kunatsEs, — *of canoe;* qa'lk·oatsEs, — *of dish.*

those free from Tsētsā'ēk·a, **N.** k·uē'-k·utsē.

my friend! **N.** k·āst.

to frighten, **N.** hawī'naala.

to be frightened, **L.** ts'E'tlkya.

frog, **L. Tl.** wok·'ā'c, **H.** atsi'.

front, **H.** tl'ās—; tl'ā·k·ām, — *of box, man* (—sk·am, *outside surface*); tlā'satsē, *painted front of box;* tlā'sanoa, — *of house, island, round object.*

fuel, **L.** lE'k·oa; *fireplace*, lE'k·o·itl (= *fire in house*).

full, **L. H. G.** k·ō'uta; **H.** k·ō't'auq gis ha'mhimisa, *this box is full of food.*

to make fun of somebody, **N.** āa'mt-lala.

to make fun of somebody's words, **N.** guā'k'wāla.

funnel for mending kelp bottle, **N.** ts'ētsEqumEsā'wuē.

furseal, **L. N.** qā'oa.

future, **L. N.** —tl; ganE'mtl, — *wife;* quā'kunatl, *canoe that is making.*

G.

game of hoops, **N.** gyā'naē, **A.** gyā'-natala.

game (*children stand in a circle around one who tries to make the others laugh by tickling them*), **A.** quā'ni.

gens, **N.** nEm'ē'mut.

ghost, **L. N.** bakuinē'i (*from* bākus, *man*), lā'lēnoq (—ēnoq, *people*), **H.** lōa'tl; **N.** lōlō'tlalatl, *ghost dance* (—latl, *dance*).

giant, **N.** hē'itsē (= *the great one;* —tsē, *great*).

gills, **L.** k·'ō'senāē, **H.** g'u'ntsē.

girl (*about twelve years old*), **L.** kya-yā'lam (= *little woman*), **H.** g·'anE'mō.

to give, **N.** ts'ā, **H.** tsoā'.

glabella, **H.** k·'akēloa' (k 'ak—, *notch;* —ēloa, *forehead*).

to gnaw, **N.** ky'ā'pa, **H.** gy'ā'p'ētsō.

to go, **L. N.** la—; lō'otltō, — *out of canoe* (—ōtlt, *out of canoe*); laqta'la, — *out seaward;* la'laō-tla, *always going across;* laqs, — *into canoe* (—qs, *in canoe*); lē'istala, — *around* (—ista, *around*); latu'sela, *canoe goes down river;* latu'selagyilis, *walking down river;* **G.** lEā'tl, *to enter* (—ītl, *in house*); laqs, *to go into canoe;* **H.** laai'tl, *to enter* (—itl, *in house*); laai'tla, *to carry into house;* laq-ī'ua, *to go through;* lā'qa, *to go downward* (—aqa, *down*); lēinakula, *to go moving towards an object* (—nakula, *motion*); tōua', *to walk;* tōtsoa', — *over a plank;* tōkoia', — *over a pile of planks.*

—— **N.** g·ō'lsElin laq John, *I am going to John.*

to go to look for ——, **N.** —uiala; qoā'qoakuia'la, — *canoe;* hā'-natlaiala, — *canoe* = *to go to buy a canoe;* hamasuiā'lagyilis, *always going about to look for food.*

go on! **L.** wēkiā'a.

god, **L.** k·ants'ō'ump (= *our father*); k·ants amiqala'soē (*whom we praise*).

good, **L. N.** aikH, **H. G.** aiH; **N.** aiuakâ'la, *good among others;*

ē'igyitlala, *good on water;* ia'qsum, *bad;* ia'kuim, *cause of evil;* ē'iknim, *cause of good (luck, etc.);* ēiknsōqstō'ē, *with pretty eyes;* ēiky'ēs, *sand (= good beach);* aihp'aqsta, *to speak good of one;* **H.** aikhitskolis, *good, flat beach;* iakh, *bad;* **G.** aihpa, *good taste;* aihp'a'la, *good smell;* aigyitsuī's, *sand (= good beach).*

good-by! **L.** alā'kyasla, **H.** wilē'-hsēqa.

goose, **L.** nE'qāk'.

grandfather, **L. N. H.** g'ā'g'emp (g'āg'a's, *thy* —), **G.** g'ag ā'p.

grandson, **N. L.** ts'ō'qtēma (ts'ō'-qtlEma (?)), **H.** ts'ō'qtlEma.

granddaughter, **N.** ts'ō'qtēmak'as (ts'ō'qtlEmak as (?)) (—k'as, *female*), **H.** ts'ō'qtlEmak's (—k's, *female*).

to grasp, **L.** k'ō'ē:ātl, **N.** dā'n'it, **H.** tqsEmē'.

grass, **H.** ky'ē'tEm; **N.** ky'ē'tōkwis, *grassy place.*

grave, **L.** tēgyā'ya, **H.** tsuwī'k', **A.** alā'k'.

—— *of chief,* **A.** tk'alē'em.

—— *in tree,* **H.** ky'ā'kqlaılak' (see *Foundation*).

graveyard, **A. H.** al'aiā's (—as, *place of*).

great, **N.** —tsē; ɬā'tsē, *great man;* hē'itsē, *giant;* Nā'nisē, *great bear;* nā'k'atsē, *the great wise one;* (see *Large*); **H.** k'a'ē'-kyas, *really great* (see *Many*).

great among —, **N.** Nemk'ē's'ānatl, *the greatest among the Nimkish;* gyēqsems'ānatl, *the greatest among the gyē'qsem.*

great-grandparent, **N.** hē'lus.

great grandchild, **N.** hē'lōgwinē (*m.*), hē'lōgwīnēk'as (*f.*), **H.** tlētlaulston.

great-great-grandfather, **N.** ē'ɬ'os.

grease of olachen, **H.** tlē'na.

grebe, **N.** k'ō'ɬaq.

green, **L.** tlE'nqa, **H.** tē'qa; tē'qsEm, *green blanket.*

ground, **N.** —gyis.

grouse, **L.** hōmhōm (?), **Tl.** mā'k'oals, **H.** mkyEls (—als, *in woods* (?)).

group of, **N.** —qsEm; t'ā'tloqsEm, *copperplates tied together;* gyē'qsEm, *a group of chiefs.*

to grow, **N.** k'a'ā'qa.

gum, **L.** k'oali'kh, **Tl.** k'oā'k'oalē, **H.** k'olē'h.

gun, **L.** hā'ntlEm (see *Arrow*), **N.** hā'natlaiala, *to go to buy a gun,* **G.** kyidai'ō.

gutts, **H.** ts'ē:i'ɛ'm.

Gyimanoitq, **G.** Qarā'ks'iala.

Gyitamat, **H. G.** Qāisla'.

Gyitamat language, **G.** awī'kyala, *= correct noise.*

II.

Haida, **H.** Haida, **G.** Qa'ēdaq.

to hail, **L.** tsi'lqa, **N.** tsi'lqmis, **H.** tsE'lqpis (= *knowing to* —), **G.** tsE'lqa.

hair, **L.** ɬā'ya, **G. H.** ɬī'a, **L. N. H.** hap—; **L.** hapa'qstēya, *beard (= mouth hair);* hā'pēlik', *eyelashes;* hapa'mtsō, — *in armpits;* hāpEhsia', *chin beard (= tooth hair);* **H.** hapta'ē, *beard (= mouth hair);* hā'paqston, *eyelashes;* hā'mtson, — *in armpits* (—tson, *inside*); **G.** hā'bilih, *eyelashes.*

half, **L.** nek'ō'iol (see *Middle*), **H.** k'ā'hsē, **N.** sō'ps'al, *to cut in half;* sōps'a'lsa, *to cut in half in woods;* sōps'alī'sa, *to cut in half on beach;* mātls'alī'tla, *to dicide into two halves in house.*

half breed, N. mā'matl'atsē (= *young of white man*).
halibut, L. N. H. p'ō'ē.
—— *dried*. H. d'ā'lōs.
—— *fabulous*, N. nemhā'likyō.
haliotis, L. N. A. H. ai'ntsum; N. Aintsumā'litlilak', *made — in house*; Aintsumk·amlitl, *covered with — in house*; āl'ēintsem, *real — (?)*; A. Aintsumk·anak'.
Humats'a, N. hā'mats'a, H. tanī's.
hammer, N. liky'ai'ō.
——, *stone*, L. N. pe'lpelk, H. p'ā'yoq, qā'utsē; p'ā'yoq t'ē'semā'qa, *the hammer is of stone*.
hand (*and fingers*), L. k·oā'qoaq—tsanē, H. k·oā'k·oaqskyanē (*hands*); haiā'sō, G. hā'isū; L. N. — tsana, tsānē; k·emqōtltsā'na, *left —*; tl'ē'stsānē, *skin of —*; hē'itlkyutts'ā'na, *right — (= right opposite hand)*; k·'utsā'nē, *scar on —*; t'at'i'qtsāna, *to scratch —*; H. G. —kyānē; k'uk'uskyā'nē, *skin of hands*; hā'itlkutkyanē, *right —*; k'oqskyā'na, *to cut off —*; alhskyanā'la, *blood on —*; ōwē'gyatlkyā'nē, *back of —*; pāk·'atlkyā'nē, *palm of —*; G. hinnaqskyā'nē, *fingers*; k·'ē'k·etgyā'nē, *ring*.
to hang over rope, *v. n.*, L. k·ā'q'uit.
—— *v. a*, N. k·ē'hoa; k·ē'us, *wash line* (= *place of hanging*); k·'ēhustâl, *woman hanging wash* (—usta, *up*).
—— *one's self*, L. mō'kuaqōt (mōq, *to tie* (?); —aqa, *down*).
to hang on to nail, L. tē'kuitl; N. tēk·uqstā'ē, *something hanging down from mouth*.
to make happen, N. k·oē'gyilisa.
happy, H. aikyek ela' (see *Good*).
hard, L. p'ē'isa.
harelda glacialis, H. ā'anak'.
harpoon for salmon, L. alē'winoq, k·atlāya (k·atlā'yō (?)), H. ts'ā'kyem.
—— *double point of —*, H. kqpa = *notch point*.
—— *shaft of —*, H. nā'siūtl.
sealing harpoon, N. māstō.
hat, L. N. tlete'mtl (—emtl, *head cover*), H. k ā'it; N. gyē'k amtl, *chief's hat* (—gyē, *chief*); yiqu'mtl, *head mask* (= *dancing head cover*); H. tl'e'kyimtl, *wooden hat for war*.
to hate (see *Envy*), N. tlē'selasuē, *the hated one*; hā'inakyalasō, *the hated one*; hē'nakyala, *to hate, to slander* (?).
hau-hau, H. hā'ok·hāok'.
to have, N. aqnō'kuatē, *he has it*; —nuk, *having*; Metlā'lanuk, *having east wind*; Koanilanō'kunē, *having smoke = who always gives away smoke*.
head, L. qums, H. G. haihtē; H. —k·ēa; k'usk·ēa, *skin of head*; tl'ōqk·ēā'lē, *head is sick*; tak·k·ēā'la, *head cover*; k·'ā'tsoak ēa, *crown of —*; tsō'sk·ēa, *dried head*.
—— *to cut off head*, L. k ā'h'it; L. N. k·ā'gyik', *head cut off*; N. qauē'k', *head cut off*.
head ring of cedar bark, Tl. k·agēma'la tlā'k·oq, H. tl'ā'k·oēioa (—ēioa, *forehead*); N. Yiqumā'lakilak', *made to use head dress*.
head presser, H. qapē'ioa (qap'ē, *cradle*; —ēioa, *forehead*).
head, top of a thing, N. ō'qtlē.
—— *of river*, N. ōgyēqtōē
—— *of land, cape*, N. ō'kuitemē; Ō'kuitemālis, — *on beach*.
to hear, H. l·ā'umētl, k·ā'uwatela; k·ā'wat'es, *with good power of hearing*.

heart, **L.** no'k·ē, **N.** nâ'k·nē, **H.** wa'stɛma.

heaven, **Tl.** lō'ua, nā'la, **A.** lɛua'; **N.** lɛ'uagyila, *heaven maker, name of the raven.*

heavy, **H.** golō'k'.

heel, **L.** ōqtlaksī'tsē (—sītsē, *foot*), **H.** ōqtlā'tlmoa.

hemlock, **L.** tlɛ'nɛk·, **Tl.** koa'q, **H.** lō'k·oas.

hermaphrodite, **H.** koa'lk·.

herring, **L. H.** wā'nē; **H.** waā'nē·gyila, *where herring use to come.*

—— *roe, fresh and dried*, **H.** âa'nt.

—— *rake*, **L.** tlētā'lō.

to hew with axe, **L. N.** sō'pa; sō'paiō, *axe* (—aiō, *instrument*); **H.** k'ō'-koa.

to hide, **L.** wu'na.

high, **L. N.** ai'ky'a, **H.** aiky'ē (see *Above*).

high water, **L.** t'ɛ'tɛpɛmē; **H.** iqoē't, *it is flood*; iqumē', *it is high water.*

hill, gently sloping, **L.** aiknɪnēū (see *High*).

to hit, **L.** k·'ā'pa.

to hold by ear, **N.** nī'sa.

hole, **L.** ko'qsoala, **N.** guā'qoē; **H.** guā'p, *torn, no piece missing*; lōpla', *a piece missing* (see *Empty*).

hoof, **L.** ts'ōqtsōqsī'tsē (—sītsē, *foot; distributive*), **H.** kskinā'tl.

hook, **L.** k·'ē'taiō, tlā'k·aiō, **H.** k·ā'-tlaiō, ak·s.

horn, **H.** wutlɛ'm.

house, **L. N. Tl.** gyō'k; **N.** gyigyō'-qtsē, *large house*; gyōqsī'wnē, *house at mouth of river*; gyōq'-ɛnqē, *house on edge*; gyōqɪɛms, *village site*; gyōgyōkōnutlɛm-āla, *houses on both sides*; **H.** gōk'; **G.** gyū'kuila, *to make —*; gyūqtlis, *house at mouth of river*; gyūqstāis, *house is in water*; gyōk, *also: winter village.*

house with many steps, **Tl.** tsō'ya-yuk·.

—— **Tl.** —tsɛms, ō.nātsɛ'ms, *large house.*

—— *on piles*, **N.** ky'ā'k·is = *founded in water.*

—— *housefellow*, **G.** wā'oitl.

—— *inside of —, house floor*, —itl; **N.** ts'āī'tlɛla, *to run into house*; tō'wītl, *to jump —*; d'ō'quītla, *to look —*; wā'wakulītla, *to bark —*; k·ē'tyeqstā'litl, *carrying in mouth in house*; mō'tsītl, *chief's wife = keeping from floor blankets*; ku'mHelalītl, *clean house*; lɛ'k·oītl, *fire —*; hanī'tl, *kettle on floor*; d'ō'k·oītlila, *to look into —*; lō'pītl, *empty —*; laaī'tla, *to carry into —*; laaī'tl, *to enter*; **G.** g'oā'itl, *to sit in —*; wā'oitl, *house mate.*

humming bird, **H.** koā'kumta.

hundred, **G.** skyōq bɛguā'num = *five men.*

hungry, **N. L.** pō'sk·a; pōsk·anlōtl, *I am — to you*; **H. G.** pō'ēs (—ēs, *inside of man*); **N.** pawē'-tsit, *one whom the hungry ask for food.*

to hunt deer, **H.** k·ā'k·amela (see *Deer*).

to hurt one's foot, **L.** iā'lelkoa.

hunting box for canoe, **N.** ō'tsaqs (—qs, *in canoe*).

husband, **L. H.** tlā'wunɛm.

I.

I, **N. H. G.** nō'gua; **N.** yin.

ice, **L. N. H. G.** tl'ōq.

Indian, **N.** bā'k'um, **G.** bɛguā'num (= *men*).

—— *of inland*, **N.** Lā'qolis, **N. H.** ā'tlasimiH (ā'tla, *inland*).

infant, **N.** wī'sa, **G.** qābq (see *Cradle*).

inland, **N.** ā'tla; atlā'lēnoq, *inland people* = *wolves*.

inside, **N.** ōtsâ,-ōtsō'; lā'tsūt, gyī'-tsōt, *to put flat object into a box*; tlɛ'nqtsūt, *to put long object into a box*; hi'lqtsūt, *to put blanket, shirt into a box*; k·apā'tltsut, *to put round thing into a box*; aqtsū't, *to put anything into a box*; kyā'tsō, *it is in box, lid closed*; kyētsō'mō, kyā'taqtlē-mō, *it is in box, lid opened*; hapa'mtsō, *hair in armpits*; ts'ihtsâ'la, *headache*; **Tl.** gya'-qtsoa, *to enter*; **H.** ō'tsoa, *inside*; gyē'tsōt, *to put into*; tuq-tsoa, *to jump into*; lōu'mtsoa, *empty inside*; lā'tsoa, *to enter*; ha'mtsoa, *hair in armpit*.

—— *a second thing inside a larger one*, **N.** hē'l'ō; hēl'utsâ'ls, *a small house in a larger one*; hē'-l'utsō, *a small lake in a larger one*.

—— *of mouth*, **N.** awētlqā'ōē.

—— *of salmon, birds*, **N.** awitsē'.

—— *of man*, **H.** ōwa'qtē, **N.** —is; sē'ilis, *snake in belly*; **H.** —is; lōpē's, *hungry* (= *inside empty*).

—— *corner*, **N.** ō'nē.

instep, **H.** wī'gyatlsī'tsē = *back of foot*.

instrument, **N. H.** —aiō.

interstices of fingers, **H.** ōwaqts'ɛsā'-wa.

inventor (see *Councilor*), **N.** kuē'q'-ēnoq; Kuēkuaqā'oē, *great* —.

to invite, **N.** a'etsēsta, *to invite all around to feast*; k·ō'stītses, *to invite guests arriving in canoes to land*.

island, **L. N.** makyâ'la, *distr.* maa'-mkyâla; mē'mkumlis, *islands opposite village*; **H.** tl'ēkyā'ē.

—— *at low water peninsula*, **H.** wēq-tlai's.

J.

jaw, lower, **H.** wunk·ēuqtē (= *edge of mouth*).

—— *joint*, **H.** ąqak·'ɛ'm.

blue jay, **L.** ku'ckuc, **H.** koā'ēlɛqs.

joint, **H.** kqta (*notch* (?)).

juice of berries, **L.** saā'k·, **H.** k·oē-lē's.

to jump, **L. N.** tu'q'uit; **N.** tu'qwuls, *to jump upon ground*; tō'wītl, — *into house*; tu'qsta, — *into water*; tuqtla'la, — *into fire*; **H.** tquā'lut, — *towards*; tqtlā'-lis, — *into fire*; tqu'neqaut, — *along*; tq'oā'qa, — *down*; tq'ō'tltsoa, — *out of*; tqsī'oa, — *through*; tqsō'stēoa, — *up*; tqsta, — *into water*; tqtsoa, — *into*; **G.** tquī't; tqtlā'lis, — *into fire*; tqsta, *into water*.

—— (*salmon*), **G.** t'ā'lema.

K.

to keep on, to continue, **N.** iā'la.

kelp, **L.** pāpōk·oā'nim, **H.** wā'watē.

kettle, **N.** hanī'tl, — *on floor*; ha'-nhtlala, — *on fire* (—htlala, *fire*); **H. G.** gy'āhtlalō'tatsē (—atsē, *receptacle*).

—— *wooden*, **L.** k·'ō'latsē (—atsē, *receptacle*), **H.** ky'etlā'tl, **G.** kyeba'tsē.

to kick, **L.** koa'c'it; **H.** k·a'naqɛit, — *with toes*; tsē'qoit, — *with heels*.

killed, **N.** ky'ē'lagyuk'.

to kill, **H.** ɛlq, tlatlala', **N.** halqa; halai'ō, *means of killing*; halq-sīua'lis, *killing on land at mouth of river*; ha'lq'ainoq, *murderer*; ha'lqagyilak', *made to kill*; halqabo'ē, *killing underneath*.

killer whale, **L. N. Tl.** mā'q'ēnoq (= *knowing to pursue secretly*), **A.** ha'lqaainoq. **H. G.** ha'lq'-

ēnoq (= *murderer*); **H.** ha'lq'-aīnō'quīlak·oē, *killer kettle*; ha'lq'aīlak', *painted killer whale*.

kindly, **N.** ē'ikyala (= *good noise*; see *Happy*); k·ēk·ak·â'lis, *a dance said to mean: every one kind to him*.

knife for cleaning skins, **L.** ky'auwai'ō, **H.** k·auwai'ō.

—— *fish knife*, **H.** k·qtsEm.

—— *pocketknife*, **H.** qtai'ō, **G.** k·et-k·tā.

—— *large*, **L.** gy'ā'qōla, **G.** ts'u'tla.

—— *of hawinalatl*, k·'a'ntlaiō.

—— *stone knife*, **H.** nEbai'ō.

knot on tree, **N.** k·ō'k·oa; k·ōk·oq-p'e'kyē, — *on lower part of tree* (= *knot on shinbone*; —p'ē'kyē, *shinbone*).

to know (see *To hear*), **L.** k·'ā'tlam, **N.** k·ā'la; k·ā'lamōtl, *he — it*; k·ā'lak·olits, *the world knows*; **H.** k·'aō'tlnō'gua, *I know it*.

—— *I do not know*, **H.** nō'ta.

knowing everything on earth (see *Story*), nū'qnēmis (see *Wise. Name of the animals in myths*).

knuckle, **H.** ōk·oia'.

L.

labret, **H.** k'a'tqtala (—qta, *mouth*).

lake, **L.** tsā'latl, **H.** g'ā'us.

lame, **H.** d'E'mkoa.

lance, **N.** wī'tlpa (—pa, *point*).

land, **N.** —gyas, —lis, —gyilis, **H.** wa'q'uis.

to land, **L. H.** lā'gyilis (= *to go to land*), **L.** ā'tlēstēH quā'k'un, *the canoe lands*.

language (see *To speak*), **H.** k·'ōmnsīuakya'la, *white man's language* (*noise*); **G.** awī'kyala, *Gyit'amat language* = *correct noise*.

large, **L. N.** wa'las; wā'lasila, *to give fifty blankets to each in potlatch* (= *to make large*); awō'-gyōq, *large house*; **Tl.** ō'mas; ōmatsE'ms, *large house*; **G.** aō'mas, **H.** k·'ē'kyas, k·'alē'-kyas (= *really large, much*); k·'ētsoa', *large water*; k·'ēH-tla'li, *large fire*; **N.** k·'ē'qtlala, *large fire*; k·'aHtlalatsē, *place of great fire*; (k·'ē'kyēna, *many on drifting log*).

large, **N.** —tsē; gyō'ktsē, *large house*; gyigyō'qtsē, *distr. large houses*; quā'quaku'natsē, *large canoes*; **K.** K·'ō'titsē, *large one pointing to earth*.

last, **H.** walā'qtlē (—qtlē, *hind*) (see *Daughter*).

to laugh, **H.** dā'tlila; dātltsE'm, *laughter*; **G.** dā'tla.

I launch canoe, **L.** wīqstEn qaquā'-kun.

lazy, **N. L.** k·'ā'msa; **L.** k·'a'msEn, *I am —*; **K.** K·'ā'msiutlē, — *on top*; **H.** kysk·ās.

to lead hamats'a around after Tsā'-ēk·a, **N.** wā'lek·a.

leaf, **L.** paā'k·; paā'k·mis, *maple* (= *leaf tree*); **H.** mēmē'eqtlao, **G.** qā'k'um.

to learn, **N.** g ā'gōtla; g āg·ōtlā'-numa, *I come to learn* (see *To hear*).

to leave, **L.** pâ'o.

left, **L.** k·Emqōtltsāna (—tsāna, *hand*), **H.** k·EmEqā'ot; k·EmE-qā'otlna, *left side of body* (—na, *body*); **G.** âdzgyut (—gyut, *opposite*).

leg below knee, **N.** ō'p'ēkyē, —p'ē-kyē; k·'ōk·oqp'ēkyē, *swelling on shinbone*; **H.** k·'ō'spēgya, tl'ē'tl'ēgya.

—— *above knee*, **L.** ōnutsa'qstē (—nuts, *side*; —qstē, *bottom*), **H.** asā'nōtsEqtlē (—nōts, *side*;

—qtlē, *hind*), —ᵓāmo; koak·-tā'maluk, *having splint in leg*; k'uk'usqtā'mō, *skin of legs above knee*; **G.** kyukqōtā'moa, *knee*.

leggins, **H.** lē'tɛlqts'oa; **G.** dzūdzu-qtsī'tsa, *dancing* — (tsītsa, *foot*).

let us not! **N.** koā'laHits.

lid of box, **N.** kok·ētayā'nō, gyī'-sɛqstâl.

to lie down, **L.** kulī'tl (—ītl, *in house*); **H.** ka'lkuitl, *lying person*.

to lie down to sleep, **H.** la'ʜstaītl (—ītl, *in house*).

to lie on back, **L.** netlē'tsō, **N.** d'ē'-kyatla; D'ēikyâ'la, *lying on back on sea*; d'ē'iʜtlala, *lying on back in fire*.

to tell a lie, **N.** tlē'lkoala, **H.** k·ē'-ik·us.

light, **N.** nā'k·ula; na'qnaikya, *day by day* (?); Naqnaaisilaō'k·oa, *making the earth always lighted*; Na'qnaikyim, *making light*; naqnaais, *earth being always lighted*; nā'k·oatlaiō, *means of giving light*; Na'qnaikyimgyī'-lak', *made light maker*.

to light fire, **L. H.** lɛk·uē'la.

light (*not heavy*), **H.** k'us.

lightning, **L.** tlɛnē'quit, **G.** qu'lt-quta (see *Fire*).

lips, **H.** sali'qtē (—qtē, *mouth*).

liquid, **L.** iā'qa.

to listen, **N. H.** k·ā'watɛla, **G.** k·â'-tɛla (see *To hear*).

liver, **H.** tl'ɛgyē's.

to load canoe, **L.** mā'wa, **N.** mō'qsɛla (—qs, *in canoe*), **H.** la'qsut (—ut, *v. a.*), **G.** wā'mɛqsut; wā'mō-tltūt, *to unload* (—ō·lt, *out of canoe*; —ūt *v a.*).

to lock, **L.** ļā'k·ɛmt.

locked, **L.** k·oē'tlk·ient.

log, **N.** t'ɛna'ē (?); **H.** ya'k·oē, *drift-wood*; p'uqoai, *a log always drifting on same place*.

long, **L. N.** gyī'lta; **N.** gyilta'la, — *river*; gyiltē'itl, — *house*; gyī'lsgyiltɛm, *long-headed people*; **H. G.** gyilt.

—— *mouth of long shape*, **N.** ts'ē'k·-atla.

—— *in composition with numerals*, **N. H. G.** —tsq.

long ago, **L. H.** k·alū'tlutl; **H.** k·al-ū'tlutl'ats, *in reference to invisible objects*.

to look, **L. N. H. G.** dō'quit; **N.** dō ļ'ok·ala, — *among*; dō'-quitla, — *into house*; dōqtsas-taitlɛla, *he was —ing into house*; dōqsɛmaintlak, *I — after*; **H.** dōqōqtla'la; — *back* (—qtla, *hind*; —la, *v.*); dōk·oitlīla, — *into house*; dōk·oaqala, — *down*; dōqsistala, — *all around*; dōq-sōstēwala, — *up*; **G.** dumdu'k·-qk·a, — *among*.

—— *up*, **L.** ēlkyak·ɛ'mʜit (= *to make face up*), **G.** hā'tɛla.

—— *down*, **L.** pɛnk·ɛ'mʜit (= *to make face down*).

—— *along*, **H.** koē'k·a (—k·a, *reaching towards*).

loon, **H.** bā'tla.

to lose, **H.** tēkō·ō't.

loud, **N.** hā'sɛla (see *Council*), **H.** ia'ky'ēk·la (= *bad noise*).

louse, **L.** k·ēn, **H.** gā'ina.

to louse, **L.** k·'u'tla.

low, **H.** nɛ'qwas.

low voice, **N.** aō'lak·ula; aō'lak·-oak·awasō, *the one speaking with lowest voice* (—k·awa, *extreme*; —sō, *participle*).

low, the lowest house of a row along river, **N.** gua'pē.

low water, **L.** ky'ā'ts'alas, **H.** tl'ō'-palis.

lungs, **H.** qu'sa.

lynx, **K.** wā'lasʜɛ (= *large tooth*) (—sʜɛ, *tooth*).

M.

made of —, **N.** —tsEs ; t'ē'sumtsEs, *made of stone.*

to make, **N. H.** —gyila ; **N.** ō'magyila, *to make chieftainess ;* hē'iligyilik·ala, *always wanting to cure* (hēitl—, *right*); wā'numgyila, *death ;* ha'mgyila, *to feed ;* lE'wagyila, *heaven maker ;* ha'lqagyilak', *made a murderer ;* K·oē'gyilak', *made a whale ;* T'ē'sumgyilak', *made stone ;* k·oē'gyilisa, *to make something happen ;* —ila ; tE'msila, *to beat time ;* **H.** a'mgyila, *to cook ;* —guila ; gō'guila, *to make house ;* wī'guilak', *painted eagle ;* —ila ; halq'ailak', *painted killer whale ;* tlē'Huila, *to make mat ;* **G.** gyū'guila, *to make house.*

to make fire with fire drill, **H.** sEla'.

man (*homo*), **N. H.** bEguā'num ; **N.** bEg'u's, *man in woods ;* baqlā'k', *eating human flesh ;* baqbaku'latl, *always eating human flesh ;* Baqbakuālanusī'waē, *always eating human flesh at mouth of river ;* bEgyâ'sit, *widower ;* bā'guala, *to talk* (*man*); bā'bakum, *youth ;* **H.** bEguā'numkyasō, *a real man ;* bgua'la, *to talk* (*man*); bgōpē's, *a talker.*

man (*vir*), **H. G.** wē'sEm; Bilqulā's wē'sEm, *a Bilqula man.*

—— ēnoq, **N.** lāqs'Entaē'noq, *who knows to cut up.*

many (see *Much, Great, Large*), **N.** k·'ē'nEm ; k·'ē'kyes, *eating much ;* k·ak·'ē'ky'ēin, *I try to eat much ;* k·ayE'nkul, *many in hand ;* k·aai'tē, *many in him ;* k·'ē'kyēna, *many on a log of driftwood ;* k·'ai'uq, *precious ;* **H.** k·'ai'nEm ; k·'aintla'la, *much fire ;* kykiē'i, *many things adrift ;* k·'ē'kyats, *large.*

maple, **L.** paā'k·mis (= *leaf tree*).

married, **H.** hā'isk'.

martin, **L. N.** tlE'k·Ek·, **Tl.** tlā'k·ik·, **H.** mE'stlk·an.

martin blanket, **N.** tlE'k·oqsEm, **H.** mā'mastlk·ōtl.

mask, **L. N. H.** yi'qamtl (yiq—, *dance ;* —amtl, *head cover*); **H.** ha'lqamtl, *killer whale mask* (ha'lqa, *to kill*); Hī-ī'uaē, *small wolf's mask for Tlōkoala, worn on head* (—īuaē, *forehead*); nau'alak· (*general term for dancing implements*).

mast, **L.** iau'apEk·, **H.** yai'uaspēk·, **G.** yū'p'iq (*wind pole*).

mat of bleached cedar bark, **N.** gyī'tsus.

—— *diagonal*, **L. N. G.** tlē'wē, **H.** tlē'oa ; tlē'Huila, *to make mat.*

—— *diagonal with black stripes*, **N.** tsā'tsaēuq.

—— *for salmon*, **N.** yipelō'.

—— *of bulrushes*, **N.** kulē'e.

—— *strands parallel to rim*, **N.** tsā'kuitl.

me, **N.** gyā'qEn.

meat, **L.** Elts.

medicine, **L.** pātā'E, **H.** ē'qsa.

to mend, **N.** hai'atlila (= *to make right*); Hai'atlilak·as, *mending woman.*

to meet, **N.** kyi'mk·a (—k·a, *reaching towards*), **H.** bā'kō.

to melt, ice melts, **L.** ɔā'qētla tlōq.

menses, **H.** ē'qenta.

middle, **N.** lā'k·aualis ; nā'k·otlēua, *the — one ;* nā'k·elta, *— on water ;* nā'k·otlēoisEn s nā'la, *middle of sky ;* mak·ō'yuitlē, *— in something on sea ;* **L.** nak·ē'klē, *midnight ;* nEk ā'la, *noon ;* **N.** gyū'iuē, *the middle one ;* gyū'iulis, *middle one of all ;* ō'yuē, *the middle one in canoe ;* nōlōyūēgyilis, *fool in middle of canoe on world.*

midnight, **L.** nak·ē′kiē (see *Middle*), **H.** k·′ā′ikya, **G.** k·′a′sk·amīya (k·′ā′stisa, *noon*).

mild, **N.** iantlEmē′tl, *made* — (*in song*).

milt, **H.** d′E′lgyim.

mink (*Putorius vison*), **L. N.** mEtsa′, **Tl. H.** kō′nA, **G.** kunā′q; **N.** KnēH, *in tales* (*probably borrowed from the Coast Salish* k·ā′iq); **N. K. Tl.** *name in myths:* tlē′sElagyila, *sun maker.*

to miss, **L.** tlē′k·oa.

monster in sea, **L.** iā′knim (= *cause of evil*), **H.** iā′knis (= *evil in sea*).

moon, **L.** mū′k′ola, **A. H.** nō′si, **G.** gyīdzō′a; **A.** *in myths* Kyē′lōyak·amē = *the first one.*

morning, **L.** nā′n′it (= *light*), **H.** wī′ōtl, k′oa′k·aai′la, **G.** na′qk·oa.

mortar, **H.** mEkoa′tsē (—atsē, *receptacle*).

mosquito, **H.** k·′a′ēqa.

mother, **L. N.** abE′mp, **H. G.** abō′uk, **N. L.** āt (*said by children*), **H.** mā′ma (*said by children*).

motion, **N. H.** —nakula; **N.** mā′nakula, *to swim* (= *fish motion*); K·′ōmEna′kula, *getting rich*; **H.** lēina′kula, *to go toward*; tlāna′kula, *bark breaker*; k′ōkEna′kula, *axe* (see *To hew*); k·ēina′kula, *to go straight ahead.*

—— *to go far off moving*, k·uī′sEtla (see *Far*).

mountain, **L.** nī′kyē (*borrowed from Nootka* (?)), **A.** k·′ōk·s, **H.** g′ō′guis, **G.** wawē′s.

—— *with snow on top*, **H.** nask·Emā′la (na′ē, *snow*; —sk·Em, *round thing*).

—— *goat*, **L.** mE′lqtlō, **H. G.** ts′āk·; ts′ā′k·gyila, *where many* —.

mountain kid, **H.** mēmE′ntl.

—— *blanket*, **L. N.** pElpElask·E′m, **H.** ts′atsaqkā′utl.

—— *tallow*, **N.** ia′sEk·.

mouse, **N. L.** gyigya′tsk·, **A.** tsā′mi, **H.** askyä′nēk·qs (*female*).

mouth, **L. N. A. H. G.** sums; **N.** —qstē, tl′ē′tsEqstē, *skin of* — (a′oaqstē, *mouth*); ak·aqstālis, *with open mouth on beach* (ak·—, *open mouth*); pE′nkyutaqstē, *chin* (= *below opposite mouth*); tē′kuqsta, *carrying in mouth*; nā′laqstala, *carrying day in mouth*; k·amquaqstalis, *feathers in mouth on beach*; hā′paqstēya, *beard*; ēkyut′ēqstēn, *palate* (= *above opposite mouth*); **H.** —qtaē; hā′pqtaē, *mustache*; sītqta′la, *a cod*; hasqta′la, *council*; saliq·tē, *lips*; k′atqta′la, *labret*; pō′qtaē, *œsophagus*; qtlqta′ē, *pipe stem*; tl′ōqta′la, *sick at* —; agya′qtala, *to scold.*

open mouth, **N.** ak·—; a′k·ētl, — *in house*; ak·aqstālis, *with open mouth on beach.*

inside of mouth, **L. N.** —ētlqā′oē; **N.** tl′ētsētlqā′oē, *skin* —; wa′pētlaqō′ya, *saliva*; **H.** tl′ōqoētlaqaua′la, *sick* —.

mouth of river, **N.** ā′siwē; —sīwaē; hanHsī′waē, *canoe at* —; gyō′qsī′waē, *house at* —; tliqsī′waē, *clover root at* —; tsātsūpatsī′waē, *river mouth dammed up*; ha′lqsiualis, *killing on land at mouth of river*; **H.** K·′ōmHsīwa, *European* (*rich at mouth of river*); **G.** wastā′s; gyūqtlis, *house at* —; **N.** kwā′k ēmatla, *facing mouth of river*; kwā′kyūtis, *shorter one of two points at mouth of river* (*compare:* gua—, *north*; guapē, *the lower one on*

ricer; —kyūt, *opposite;* —is, *land*).

to put into mouth, **N.** k·'a'sɛla; woqsɛm k·'a'sɛla, — *from both sides.*

mouth full of water, **N.** hamā'la (see *To eat*).

to move, change home, **N.** k·ō'stis.

to move head while dancing, **N.** quā'nēk·a; gyē'sɛla (*in songs.*)

to move wildly, to boil (*water*), **N.** p'ō'lēqola.

murderer, **N.** kuē'qagyila (=*killing with club*); ky'ē'laky'ēnoq.

muskrat, kyilā'k·.

N.

nail of finger, **L. N. G.** ts'ɛ'mts'ɛm, **H.** ts'ɛmts'ɛ'mk·amē.

name, **N.** tlē'qk·am; tlē'k·ala, *to* —; tlatlik·ēlā'lait, *every one —s him;* ā'nkoaqtlas? *what is your —?* tlēk·atɛ'ntlas Nā'ntsē, *my name is Nā'ntsē.*

nape, **L.** ā'wapē, **H.** k·oā'kɛnkɛnē.

narrow, **L.** āmā'pitoq t'ē'ɛila, *narrow* (*small*) *road.*

navel, **L.** k·ɛtɛlō·k·oltsē, **H.** pō'k·tsē, **G.** pɛ'tsdzē.

near, **L. H.** nɛqoa'la.

nearly, ha'lsɛla —; ha'lsɛla'min wē'tsɛm, *I was nearly not in time.*

neck, **L.** k·'ō'k·'ōn; **N.** ōqtlsā'toē, *posterior part;* ōqā'oē; —qāoē, *anterior part;* **H.** k·'ok·'ō'nē; —qāoa; pētsɛqā'oa, *wind pipe;* k·'ōtsaqā'oa, *collar bone;* k·'ōk·oqā'oa, *Adam's apple;* tl'āk·qā'oa, *neckring of bark;* tlō'·qouqāola, — *is sick;* — skyena, — *posterior part;* tlō'qoaskyenā'la, — *is sick.*

neckring of Hā'mats'a, **Tl.** tla'k·ak·, **A.** k·'ā'lamōtl.

needle, **L.** k·'ɛnā'iō, **H.** k·oā'qpa (—pɛ, *point*).

—— *for macerating bark*, **A. H.** tl'akoā'nē.

nephew, **L. N.** tlōlē', **H.** tlō'ɛl.

nest of bird, **H.** sīwa'tsē (—atsē, *receptacle*); k·ɛlqaila'tsē.

net (*various kinds*), **A.** tlakim, qā'·utɛm, **N.** gyigy'ē'tlɛm, **H.** yik·qk·, k·'ōkhoayai'ō.

nettles, **N.** ts'ɛ'ntsɛnqtlɛm.

new, **L.** ā'tlitsɛm.

news, **N.** ts'ē'tlwala (see *Famous*).

to nibble, **L.** k·'ɛhī'ttsāō.

niece, **L. N.** tlōlē'k·as.

night, **L.** k·ā'nutl, **H.** nēkk, **G.** g·ā'·nūtl; **L.** nɛk·ē'kiē, *midnight.*

nine, **N. H. G.** mūwō's.

nineteen, **G.** mōuasgī'u.

ninety, **G.** môpɛnkyásk·'ā'pōpɛna.

no [ī, wī, ky'ē], **N.** wī, *not;* ky'ē, ky'ē'us, *no, none;* wī'lok·, *none* (*obsolete*); wī'ɛmk·'asɛla'sōqtis, *with what he was not satisfied;* wī'k·'as, wī'k·'asɛla, *not to have enough;* wī'utl, *not to get what one wants;* wē'kyaē, *not quite full* (—kyaē, *top of box*); wī'·tsɛm, *not in time;* wīō'sukuila, *making that there is no time to escape;* ia'qsum, *bad;* **H.** ky'ē, *no;* iakh, *bad;* **G.** wē'tlimas, *weak.*

it is not right, **N.** ō'tsatla.

noise, **N. H.** —ala; **N.** ba'quyala, *summer song* (ba'qus, *time when no ts'ētsā'ēk·a is held*); ts'ē'·k·ala, *ts'ētsā'ēk a song;* k·oē'·k·ouqala, *raven's voice;* bā'sɛla, *loud;* kuā'kunqs'ala, *council;* hauā'q'ala, *baton;* sa'oltala, *noise of falling objects;* tlēana'la, *noise of falling to pieces;* qɛ'·nt'ala, *to snore;* dɛ'nqɛla, *to sing;* **H.** tlusa'la, *bad tempered;* tlē'qala, *to beat time;* hai'lala,

to scold; kē'q'ala, *noise of saw;* **G.** Guē'tala, *Tsimshian language;* **H.** —k·oala; **N.** tsō'k·oala, *noise of dancing apron;* aō'lak·ula, *low voice;* gyō'qgyō-k·oala, *noise of breaking;* **H.** aikn'ēk·ula, *good noise;* **G.** Hēiltsa'k·oala, *Hēiltsuk language;* **N. H. G.** —kyala; **N.** hē'ikyala, *noise;* kumlēqkyala, *noise;* ts'ē'koikyala, *voice of gull;* hā'inakyalasō, *hated;* **H.** k·'ōmnsīuakyala, *white man's language;* ky'ē'kyala, *wooden trumpet;* **G.** awī'kyala, *correct language.*

noise, **N. H.** ku'nqula; **N.** Ku'mkumlēqa'tsē, *name of rocks near Ft. Rupert = noise place;* **H.** kunqlā'lis, *noise place.*

noon, **L.** nEk·ä'la, **H.** k·'ā'ek·ea, **G.** k·'ā'stīsa.

Nootka Sound tribe, **N.** Tsē'qtlis'atq.

north, **N.** gua'ē, gua'tsē; guaē'noq, *northern tribe;* **H.** atl'E'l.

north wind, **Tl.** qaiō'tl, **A.** yuyā'lanok·.

nose, **L.** Hi'nts'as, **H.** Hmāk, **G.** Hūma'q, **N.** —itlpē; **L.** kwā'witlpē, *perforation of septum;* **N.** tl'ē'tsitlpē, *skin of* —; **H.** —itlpa; ū'itlpa, *bill;* tlōqoētlpē'lē, *nose is sick;* tlE'nk·oitlpa, *point of* —; k·oā'k·oitlpa, *perforation of septum.*

nose ornament, **Tl.** kyū'kuis.

upper part of nose, **H.** ōwak·ā'ois.

nostril, **H.** Hi'nts'as (see *Nose*).

not, **N.** ky'ē, **G.** ky'ū.

notch, **N.** k·aq; k·aqaqtla', *with two points;* **H.** k·aqdē, *notch of arrow.*

novice in forest, **N.** gyī'egyila (*=making chief*); d'ē'k·Ematla; tsē'tlEla, — *after his return from the forest.*

O.

obsidian (?), **Tl.** tsk·uls.

ocean, **N. H.** tl'ā'sak·; tlask·ē'noq, *people of —;* tlā'tlasik·oala, *those on —;* **L.** ā'owēkH, *foam* (?).

œsophagus, **H.** pō'qtaē (see *Mouth*).

often, **N.** —pEs; dōk·ulā'psEntlak·, *I see him —;* ts'Eqk·'ā'pEsEn, *I am — sick;* —Elk·; ts'Eqk·'·E'lEk·En, *I am — sick* (see *Expert*).

oil, **L.** k'Els, **H.** tlē'na.

olachen, **N. H.** tsā'qun; **H.** tsā'quila, *where — is always dried;* **N.** ts'E'mt'Ek·, *half dry;* wī'ōt'En.

old man, **N.** k·'u'liak·, **L.** nō'mas; **N.** NōmasE'nqēlis, *the oldest on earth* (—Enq, *edge*); **H.** nō'mas.

old woman, **L. N. H.** tlEkuā'nē.

old, **L.** k·ē'iōtl.

old (*inanimate objects*), **N.** k·ä'tla (see *Long ago*).

Ō'mamis, name of a place.

on, (1) — *long object,* **N. G.** ō'kyena; **N.** k·'ē'kyena, *many on log;* **G.** goā'kyena, *to sit on long object.*

—— (2) — *flat object,* **N.** ō'tsuē; k·ā'sEltsuē, *to walk* —; goā'tsaoas, *settee;* **H.** ō'tsoa; tōtsoa', *to walk over plank;* goā'tsoa, *to sit on plank;* goā'tsāitl, *to sit on bed in house;* **G.** k·ā'ltsoa, *to walk on plank.*

—— (3) — *round object,* **N.** ōk'unē.

—— (4) — *a pile* (*on surface*), **H.** —tlala; dlā'qolatlEla, *to stand on planks;* goā'latlEla, *to sit on planks.*

once, **L.** nE'mp'ana.

one, **N.** nEmō'k·; NEmō'kuis, *the only one;* NEmō'kyustâlis, *the only one who came up out of ground;* **H.** mEn; **G.** nōq; misk·Em, *one round object;* mitsq, — *long object;* mE'n·

EQtla, — *cup*; mENtsq, *twenty (one man)*.

one another, **N. G.** —ap; **N.** mak·-ā'p, *to throw —*; **G.** alqa'p, *to kill —*.

one eyed, **H.** k'oa'qstō.

only, **N.** ō'ma.

open, **N.** ak·—; ak·stâ'la, *open box*; ak ā'tla, *open mouth*; a'k·ētl, *open mouth in house*; aqstū't, *to open*.

opposite, **N.** —kyut; nEqkyū'tis, *the one — outside*; nEqkyū'ta, — *rocky place* (—a, *stone*); nEqkyū'titl, — *in house*; kwakyū'-tis, *the shorter one of two points at mouth of river*; **L.** pE'nkyu-taqstē, *chin* (= *below opposite mouth*); ē'kyut'ēqstēn, *palate* (= *above opposite mouth*); hēi-tlkyuttsāna, *right hand* (=*right opposite hand*); K·'ōmkyū'tis, *rich one opposite on land*; **H.** —kōt; hai'tlkotlna, *right side of body*; hai'tlkotkyanē, *right hand*; **G.** —kyut, âdzkyut, *left side*.

orator, **G.** ha'tlEqtEqs.

ornament of ear, **H.** mō'koato, *distr.* mu'mkoatō (— ato, *ear*; mōk, — *tied* (?)).

other side of, **L. N.** apsūt, —sūt; k·oī'sut, *far other side*.

otter, **L. Tl.** qu'mti, **H.** k'u'la; **G.** kutlsk·'ē'qta; **H.** ky'ā'ma, — *young*.

overhanging, **N.** tlā'k·'anuk.

our, **N.** sins.

outside, **N. H.** —us, is; **N.** bEg'u's, *man in forest*; aq'a'lkus, *blood on ground outside*; **H.** tlō'k·'us, *country bare of plants*; **N. H.** — lis, Els; **N.** tu'qwuls, *to jump upon ground outside*; kuī'-Hals, *to fall —*; d'apE'ls, *to flood ground*; **L.** lā'wils, *outside*; tsEqtsEtk·oa'ls, *swamp*; **H.** d'ō-k·olisEla, *to look out of house*; k'usE'ls, *wolf*.

out of, **L. N.**—ōtlt; lō'otlō, *to go out of canoe*; k'ō'qotltsut, *to take off blanket*; **H.** —ōtltsoa; tqō'tltsoa, *to jump —*; sō'tltsōt, *to take out of box*; gyaq'ōtltsoa, *to come —*.

outside of house, **H. G.** —aqsē; ts'ōɪ'qsē, *heraldic column*; gō-a'qsē, *to sit —*; **G.** gōɪ'qsē, *to sit —*; ky'ā'taqsūt, *to paint —*.

outside of whole body, **N.** ō'gwitaē.

outstretched legs, **N.** ilē'is (=*Cormorant Island*).

over, **N.** —tlanē; k·ā'tsētlanē, *to walk over log*; **G.** —tlna; k·a'-tlna, *to walk over log*.

owl, **H.** tHtHnī.

P.

paddle, **L.** sīwā'iō, **H.** g'āu'ma.

to paddle, **L. N.** sē'quit; **N.** hē'-mEnatlEn sē'qoa, *I always —*; **H.** g'āu'sa.

pain ceases, **N.** ō'mat'ēt.

to paint, **L.** ky'ā'ta; ky'ā'talō, *brush, pencil*; **H.** ky'ā'ta; ky'ā't'ē-noq, *painter*; ky'ā'taqsūt, *to paint outside of house*; ky'ā'tl-sEmt, *to — outside of house*; ky'-ā'tgyōt, — *inside of box*.

paint, white for face, **L.** k·uE'q.

—— *red for face*, **L.** k·ums, **H.** gums.

—— *black for face*, **H.** ts'ō'tsEtlEmk.

palate, **L.** ē'kyutēqstēn (= *above opposite mouth*).

palm of hand, **H.** pāk 'atlkya'nē (—kyanē, *hand*).

panther, **L.** mami's, **K.** bEte', **H.** nātl'ai'a, **G.** mayā's.

parents of twins, **N.** yikwī'tl.

part of, **N.** —k·tis.

participle, **N.** —sō ; —suē, *the one, who* —.

—— *passive*, —k‘ ; k·’a′mgyik‘, *bitten ;* hamaā′k‘, *eaten.*

parting of hair of woman, **L.** kH’ē′-Hita ; **H.** k·’āqtpa′ls.

partridge, **L.** k·uku′m.

to pass by, to go past, **N.** lā′k·a (la—, *to go ;* —k·a, *reaching toward*); ts’ē′k·oē, *passage.*

passage where travelers meet, **N.** kyi′mk·it.

past, **N.** —tēis; Quā′kunatēis, *broken canoe ;* **H.** —ōtltē ; gyil’okō′ılē, *broken canoe.*

P·ā′tsis, name of place.

to pay, **L.** k·ō′na.

to peel off cedar bark, **L. A.** si′nga.

pelvis bone, **H.** kwā′kōlEqtlē (—qtlē, *hind*).

pencil, **L.** ky’ā′taiō (= *painting instrument*).

penis, **N.** ōqsak·ā′oē ; mōqsak·ā′oē, *with tied* —.

people, **L.** bā′k’um, **H.** bEguā′num ; **N.** —ēnoq ; Tlask·’ē′noq, *people of ocean ;* mā′q’ēnoq, *pursuing secretly ;* **H.** ha′lq’ēnoq, *murderer;* **H.** —itq, K·ō′k·aitq, Wītlē′tq.

perfect, real, **N.** aowī′la, *rough sea ;* **G.** awī′kyala, *correct language.*

perforation, **N. H.** koa— ; **L.** koa′s-koanē, — *of ear ;* koa′witlpē, — *of nose* (—itlpē, *nose*); **H.** koa′koathoa, — *of ears* (—athoa, *ear*); koa′koitlpa, — *of nose.*

pestle, **H.** mEkoā′iō.

pillow, **L.** k·ē′i′nūtl, **H.** k·ai′nōtl.

pine, **L.** qā′qumis (—mis, *tree*), **A.** ā′nHlt.

pipe, **L. H.** wā′q’atsē (= *smoke receptacle*), **G.** k·a′k·patsē (k·ak·-pa, *smoke*).

pipe stem, **L.** tlā′noē, **H.** qtlqta′ē (—qta′ē, *mouth*).

to pity, **N.** waiatiHītEntla′soq, *I — him ;* wā′iatigyilak‘, *not pitying any one.*

place, **N.** —lis; iuā′lis, *where always wind.*

—— **N.** —us, as, —las ; k·ē′us, *wash line* (*drying place*); kH’ē′-tōkwas, *grassy* — ; k·ō′lsElas, *where always feasts are given ;* sakwa′s, *cutting place ;* gy’ō′lō-tas, *porpoise place ;* goā′tsaoas, *settee* (*sitting on place*); **H.** lE-gui′las, *fire* — ; alāea′s, *graveyard ;* **G.** tl’ē′las, *store* (*selling place*); ku′l’īlas, *bed* (*sleeping* —).

—— **N.** —at ; ts’ē′kuat, *egg island.*

—— **H.** —ēles ; tlēaē′les, *store.*

—— **H.** —ā′sē, tlq’ēā′sē ; hanēa′sē s gy’iloa, *place of canoes in woods;* gy’iloaaia′sē, — *of canoes on beach.*

—— **H.** — ēnoq ; koē′saēnoq, *where always snow ;* iōlaēnoq, *where always wind.*

—— *where always something happens*, — tEms, **N.** k·oā′iastEms, *where always whales ;* gyū′qtEms, *village site;* k·uī′lastEms, *feasting place ;* hā′k·oqtEms, *fighting place* ; **G.** —tEma ; gyū′qtEma, *village site.*

to plait a braid, **L.** k·’a′sk·Elqtlē, **H.** k·’ā′tla.

platform of canoes, **H.** hā′wanak·k‘.

—— *of house*, **L.** pā′ēitl, **H.** cHsauaī′tl (—itl, *in house*).

to play, **N.** a′mtla ; hamā′tlāla, *women* —.

point, —pa ; **N.** wī′tlpa, *lance ;* Ts’i′lkyEmpa, *feathers on top ;* mō′mēqpa, *white headed ;* gua′-pē, *lowest house on river;* mā′qpē, *end ;* awi′tlpē, — *of land ;* ōpē, *point ;* mā′tilpē, *point of Mā′-tagyila;* aiHpa, *sharp* —; iē′iHpa,

dull (= *bad point*); k·'ō'mpigyilis, *richest in land*; gyō'k·opasīla, *house at point*; ē'igyispalis, *sand point*; **H.** kɑō'mpa-ut, *to break off* —; tlɛ'nk·oitlpa, *point of nose*; hā'ntlɛmpa, — *of arrow*; goa'pa, *to sit on* —; sɛ'mssmspa, *Sisiutl* (= *mouth at both ends*); **G.** ssī'hpa, *sharp*; paspɛ'luqpa, *dull*.

poison, **N.** wā'lagyila(*in song* = *making people die*), **A. H.** au'qsōlē.

pole, —pɛk·; **N.** iau'apɛk·, *mast* (= *wind pole*); sɛntlē'pɛk·, *flag staff*; ts'ē'qpɛk·, *dancing pole*; moqpɛk·, *heraldic column* (= *tie pole*, — *to which blankets are tied*); ha'mspɛk·, *hamats'a pole*; **H.** yai'uaspɛk·, *mast* (= *wind pole*).

pole for roasting salmon, **H.** tl'ō'msanō.

—— *of tent*, **H.** tl'ā'qsɛm.

poor, **N.** wā'natlē.

porcupine, **N.** mē'hitē, **H.** nūt, **G.** nūlā'k·amē (= *greatest fool*).

porpoise, **N.** gy'ō'lōt; gy'ō'lōtas, — *place*; **H.** tl'ā'tlɛla, **G.** gyi'titl.

post of house, **L.** tlām, **H.** ts'ō'wītl (—itl, *in house*).

—— *carved*, **H.** ts'ihtsoē'tl.

potato, **L.** k·âs.

potlatch, **L. N.** iā'k·oa; iā'k·ola, *what is given in* —; Hāaqk·olā'tlɛmēk·a, *woman always giving away presents in potlatch*; hā'qk·olatl, *always distributing blankets*; p'asa', *to distribute blankets*; p'asa'gyila, *to make potlatch*; p'ē'p'āyala, *to promise to distribute blankets*; mā'qoa (*in songs*), *to give ten blankets to each guest*; mā'qoagyila, *to give a feast during which ten blankets are given each guest*; mā'qolagyilis, māqsistā'lisa, *to give ten blankets to each person of all tribes of the world*; tlā'qōlēlem, *to give feast during which twenty blankets are given to the opposite gens*; wā'lasīla (= *to make great*), *to give feast during which fifty blankets are given to guests*; la'qt'ūt, *to give a feast to the opposite gens*; la'qt'ōtpɛs, *one who always* —; mā'lē (*obsolete*), *to distribute blankets*; hamā'lagyilatl, *always distributing blankets*; amā'qut, *to give away copperplates or other objects, a pile of objects*; amā'qulatl, *always giving* —; **H.** iā'ha, *potlatch*; tlōola'qa, — *dance*; tlīɛ'nq, *time of* —; **Tl.** k·uitlā'qalus, *potlatch*.

potlach, notice to friends that a potlatch will be given, **N.** tlē'lala, **H.** tlēa'la.

—— *invitation to potlatch*, **L. N.** tlē'la, **H.** tlē'tla.

powder, **L.** ts'ō'laiō.

to praise, **N.** ā'miaqa; ā'miaqēt, *the one praised*; **H.** k·antsamiqala'soē, *God* (= *our praised one*); **N.** tsɛlō'k·a (see *Famous*).

precious, **N.** k·'ai'uq.

to pretend, **N.** —būtla; hamā'būtlɛn, *I* — *to eat*; mē'qabūtlɛn, *I* — *to sleep*.

pretty, **N.** aikyā'oē (= *good forehead*); **G.** aikh s bɛguā'num, *a* — *man*.

puffin, **H.** ōwī'tlpa (—itlpa, *nose*).

to pull, **L.** kh'ī'mihit.

to pull canoe into water, **L.** wī'quit, **H.** tluqstā'ūt (—sta, *water*; —ut, *v. a.*).

to pull out from among, **N.** nɛq'ak·â'la (—ak·a, *among*).

to pull out hair, **L.** k'ula'; k'ulai'ō, *tongs*.

pupil of eye, **L.** ts'ā'ɪs'olik·, **H.** bā'koanEmstoa (= *man in eye*).
purpose, **N.** hē'numa; —numa; k·'āk·otlā'numa, *I come to learn.*
to pursue, **L.** k·ā'k·ēhit.
—— *secretly*, **N.** mā'qa; mā'q'ēnoq, *killer whale* (= *knowing to* —).
pus, **L.** tl'ōp.
to push canoe into water, **H.** tlqsta'ūt (—sta, *water*).
to push canoe ashore, **H.** tlqsiali'sa, tlqsia'ūt.
to put, **N.** muqtsâ'la, — *round thing into box* (muq—, *round thing;* —tsâ, *into;* —la, *v.*); muqwi'lsEla, — *round thing outside on ground;* sEh'ātlts'ūt, ky'atsâ'la, — *long thing into box;* lEq'ā'tltsūt, *to — blanket into box;* **H.** gyētsoa'la, *something long that has been — into box.*
to put on blanket, **N.** k·'ōqtsâ'la, **H.** k·ō'tiH'it.
—— *hook into water*, **L.** ts'E'qstEnt.

Q.

Qā'ēqaes, name of tribe.
Qā'isla, name of tribe.
Qō'ēas, **N.** *name of extinct tribe.*
quail, **Tl.** kui'lkau.
quartz, **A. N.** qū'ēla.
quick, **L.** hā'nakuē, **H.** hālakyelak·s; hā'lakEla, *to work* —; hē'Hala, *to walk* —; ī'Ha, *fast.*
quiet, **N.** tEnu'lk·oatla, ōmatatlā'la.
quilt, **H.** mākHia'.
quiver, **H.** hā'ntlEmatsē (= *arrow receptacle*).
quotative, **N.** —lawē.

R.

raccoon, **L. Tl. N. H** mā'yus; *Nuqnēmis name*, māyusōstâ'layilak·; **A.** kuē'k·qt.
rafters, **L.** pu'qbala, **H.** ōwau'tlt'a (*running from ridge to side walls*), kaiiaa'us (*running lengthwise, horizontally over the last named*).
rain, **L. H. G.** iū'koa; **H.** iūkuē'noq, *rainy country;* iūkoaila, *it is raining.*
rainbow, **L.** aai'Htlala, **H.** mīHsā'k·.
to raise, **L.** tlā'H'it.
herring rake, **L.** tletai'ō.
rapids, **L.** ts'ā'la.
rattle, **L. N. Tl. H.** ia'tEn; **N.** kuā'qatEn, *tlokoala rattle.*
raven, **L. N.** k·oa'wina; k·oē'k·uaqala, *raven's cry;* **H.** gō'ē, **G.** gā'aq; **N.** lē'labalis, *flying from one end of world to the other;* lE'wagyila, *heaven maker.*
to reach towards, **N. H.** —k·a; **N.** lā'k·a, *to go past;* k·oā'k·a, *to surpass;* kyi'mk·a, *to meet;* **H.** koē'k·a, *to look along;* tsE'k·a, *to throw toward;* tsEk·a'nut, *to throw at* —.
to reach, **N.** k·'ō'tis, *reaching to earth.*
real, **N. H.** —kyas; **N.** gyilEmkyas, *really feared;* hē'meskyas, *real chief;* bEguā'numkyasō, — *man;* ku'nquakyasō, *what a thunder!* **H.** k·'ē'kyas, *large.*
receptacle, **L. N. H. G.** —atsē; **L. N.** wā'qatsē, *pipe;* mEna'tsē, *drum;* nā'k·atsē, *bucket;* ts'Epa'tsē, *small dish;* **N.** ā'watsē, *foam place;* k·'ō'latsē, *wooden kettle;* **H.** hā'ntlEmatsē, *quiver;* sīwa'tsē, *nest;* k·'Elqaila'tsē, *nest;* dā'dōk·ola'tsē, *armpits;* tē'qatsē, *bladder;* kH'ē'patsē, *large blanket basket;* tEngua'tsē, *grease box;* kH'ElqsEma'tsē, *white — blanket box;* ōk·wala'tsē, *woman's working box;* mEna'tsē, *drum;* ts'Epa'tsē, *dish;* gy'āHtla-

lō'tatsē, *kettle;* **G.** k·a'k·patsē, *pipe;* gyēba'tsē, *wooden kettle;* gy'ĀHtlalō'tatsē, *kettle.*

to recover one's property, **N.** ē'toqa.

red, **L. N. H.** tlā'k·oa; **L.** tlā'k·oataē'kH, *evening sky;* tlā'qsEm, *red blanket;* **H.** tlā'oqstō, — *blanket;* tlā'k·oēloa, *red cedar-bark head ring* (—ēioa, *forehead*); tlak·qā'oa, *red cedar-bark neck ring* (—qāoa, *neck*); tlā'k·ōtas, *alder;* **G.** tlā'qstō, *red blanket;* **L. N. A.** tlā'k·oa, *copper.*

relatives, **L.** tlā'la, **L. N.** nātlEmwīwut.

—— **L. N. H.** —Emp; gāgE'mp, *grandfather;* nEgu'mp, *father-in-law;* **L. N.** apE'mp, *mother;* ōmp, *father;* gy'imp, *sister-in-law;* **H.** āu'mp, *father;* qtlEmp, *uncle;* **G.** —ap; gaga'p, *grandfather;* âpf, *father.*

refuse, **H.** —āoa; hāmasā'oa, *rest of food;* k'ōk'oakā'oa, *chips* (= *refuse of chopping*); kēkēqā'oa, *sawdust;* —qtlēe (*hind part* (?)); ha'mts'aqtlē'e, *rest of food.*

to return, **L.** ē'tsecta; **N.** k·antlogyiaqa'la, *when I return* (*old form*); k·antlōgyiaqē'tlētō (*new form*).

to take revenge, **L.** k·'esē'tō.

rib, **L. N.** k·E'lEm, **H.** hā'kya (—kya, *back* (?)).

rich, **N.** k·'ā'yamala; k·'ō'matlan, *I am* —; K·'ō'mpīgyilis, *richest on earth;* K·'ō'mkyūtis, *the richer one opposite;* K·'ōmk·'ōmkili'kya, *richest of all;* K·'ōmō'k·oa, *rich;* K·'ōmEna'kula, *getting rich;* K·'ō'mōyuĕ, *rich one in middle;* **H.** K·'ōmHsiwa, *European* (*rich at mouth of river* (?)).

right, **N.** he'itlala, *it is* —; hē'ilkyut, *right side;* hēilkyutlEnūtlEmē, *right side of face;* hēitlā'lit, *to arrange bed;* hē'iligyila, *to cure, to mend;* hēili'gya, *shaman;* **H.** hā'itlkōt, *right side;* hailē'tlatl, *to cure;* hailē'kya, *shaman;* **G.** hā'itlkyūt, *right side;* hailikyala, *shaman.*

right, it is not right, **N.** ō'tsatla.

rim, **N. H.** ōē'sta (see *Around*).

—— *hollow rim of lid of box,* **N.** hā'lek'.

to rise, **L.** lāq ai'kyēta kō'aHila, *smoke rises* (= *goes up*); kHaqpā'tla it, *river* —; **N.** lā'tuse'ā'gyilis, *sun rises;* **A.** toatusklā'gyilis, *sun rises* (see *Down river*).

river, **N. H.** wa, **G.** wap (= *water*).

road, **L.** t'ē'Hila; **G.** k·'ā'tltōwa, *to walk on* —.

to roast salmon, **H.** tl'ō'pa; **L.** tl'ō'puk', *roasted salmon.*

robin, **N. Tl. H.** ku'ltEm.

to rock cradle, **L.** tē'kula.

rock, **N.** —a; wī'nak·oa, *rocky place* (see *Stone*).

roe (*unlaid*), **L. H.** d'E'lgyim (**H.** k·'u'tE (?)).

—— (*laid*), **H.** d'asō'k.

salmon roe, **L.** k·ē'nī, **H.** kai'nē.

to roll up a thing, **N.** lē'k·oa, **L.** kH'i'lHsEmt (*to wind a ball of string*).

roof, **L.** tōō'k·.

roof boards, **H.** hā'was.

roots, **N. L.** tl'ō'pikH, **H.** tl'ō'kum.

—— *edible,* **L.** mō't'aqsten, qā'tEm (= meē'n, *Çatlōltq*), ts'ā'kyus; tliqsī'm, *clover root;* **A.** qō'kum, *Indian rice;* t'ō'qsōts.

rope of seaweed, **H.** sā'nap'at.

rope, **L.** ts'ā'ēqan, **H.** ts'ā'iq.

—— *large, heavy,* **N.** ta'tuwiqotl.

—— *of cedar bark,* **L.** mō'koanoē, **H.** milk'.

rope of skin, **H.** k'ō'tsē (see *Skin*).
—— *of spruce roots*, **L.** tl'ō'pikʜ, **H.** tl'ō'kum (see *Root*).
—— *of cedar twigs*, **L.** tlE'nakya.
rough sea, **N.** p'ō'lēk·olā'mas, *making sea rough;* auwī'la; auwilakyitlanuk, *having rough weather and sea;* **H.** tlā'qola.
to speak with rough voice, **N.** tlā'lawulak·ula.
round, **L.** ki'lʜsEm, **H.** lo'qsEm; lo'qsEmītl, *round thing on floor;* **N.** mūk·ola, *moon* (= *round thing put down*); pā'k·aqtlēmō, *round thing is in box.*
—— *outside of round thing*, —k·am, —k·Em, —sEm; **L.** pEnk·E'mʜit, *to look down* (pEn—, *down;* —k·Em, *outside of round thing, face;* —ʜit, *v.*); ēikyak·E'mʜit, *to look up;* **N.** ō'sqEmē, *outside of round object;* mamōsk·amEE'nkoa, *carrying four round ones;* Aihtsumsk·amlitl, *covered with haliotis in house;* lō'sEmʜit, *to uncover face;* kuā'kuqsEm, *biscuit;* **H.** nask·Emā'la, *mountain with snow on top;* tā'k·umt, *to cover face;* tl'ā'sk·am, *front of box;* ō'sk·amē, *outside of round thing;* ts'ē'koisk·Em, *wash-bowl;* goa'sk·amils, *to sit outside on round thing;* tl'ō'qsEmla, *mountain bare of plants;* qau'sEmt, *to wash canoe;* alʜsimā'la, *blood on a round thing.*
to run, **N.** ts'aē'tlEla, — *into house;* **H.** gy'ēqsēsta'la, — *around* (—ista, *around*); gy'ē'qoalūt, — *towards.*
—— *river*, **N.** tsinâ'la, **H.** tsē'ʜEla.

S.

sacred object, **N.** k·ā'mina.
sad, **L.** tsiqe'la nâ'k·oē (=*heart is sick*).
sail, **L.** iā'oapEm, **H.** yai'uastEm; yai'uatsk, — *hoisted;* **G.** yai'wadzEm (*from: wind*).
saliva, **L.** wa'pētlaqō'ya (= *water in mouth*).
salmon, **H. G.** mēa'; **H.** mā'agyila, *where always salmon;* **H. G.** mamē'a, *to catch* —; **H.** mamē'asilas, *where always houses on beach for catching salmon;* **N.** mā'wa, *salmon trap.*
—— *dog salmon*, **L.** k·oā'qnis; **H.** goā'qanis.
—— *spring salmon*, **L.** sā':s'Em, **H.** hai'sEn, **G.** k āps.
—— *cohoes salmon*, **Tl.** tsawu'n, **G.** tsū'En.
—— *sockeye salmon*, **N.** mētlī'k·.
—— *sp.?* **Tl.** hanu'n; *sp?* **A.** tloqo'lamis.
—— *humpback salmon*, **N. G.** ky'ā'pē.
—— *hooknose salmon*, **H.** was, **G.** huma'q'i.
to catch salmon, **L.** wā'yala.
salmon, split, **L.** t'ā'lEk·.
—— *dried*, **L.** ky'ō'loq, **H.** qam'a's.
—— *roe, dried*, **H.** k'akhk.
salmon berry bush, **L.** k·'·cā'tlmis (—mis, *tree*).
salt, **L.** tEmsh; tE'mp'a, *salt taste* (—p'a, *taste*).
sand, **N.** ēiky'ēs (=*good beach*); ēigyispālis (see *Sea*), *sand point on beach;* **G.** aigyitsuī's.
satisfied, **N.** mE'ntlēē, **H.** pa'nk·la (see *Stout*).
to save, **N.** nā'la.
saw, **H.** kēqsēyāi'ō; kēq'ā'la, *noise of* —; kēkēqā'oa, *sawdust.*
to say, **N.** nēkhsewē'tikʜ, *they* — *to me.*
scalp, **H.** kunuqtlē'e.
scar, **L.** k·oa —; k·oatē'oaē, — *on forehead;* k·oatsā'nē, — *on hand;* k·oatE'miga, — *on cheek.*

to scold, **H.** agya'q!ala (—qta, *mouth*).

to scratch, **L.** tlā'qa, t'āt'l'qtsānak (—tsāna, *hand*).

sea, **L. H.** tEMSQ, **G.** dEMQS (?), **L.** nō'waky (*foam* (?)).

—— *in sea*, —is; **N.** tsā'ēk·is, *secret in water;* k·'ā'mis, *crab;* **H.** ia'kHis, *monster* —; k·a'lkuntsis, *body on bottom of sea.*

—— *on sea*, **N.** —tlē; nak·ō'yuitlē, *middle of something on sea.*

sea egg, large, **L.** mEsē'k·, **H.** ts'Ekuī'tsē.

—— *small*, **L. Tl. H.** ā'mtEm.

seal, **L. N.** mē'kuat, *ditr.* mē'emkoat; mēmē'koatk', *eating* —; **A. H. G.** sāgu'm.

—— *young*, **L.** kHE'miastō, **H.** wulē'q.

sealion, **L. N. G.** tlē'qēn, **H.** mau'akya; mau'akyaHtEM, *sealion island.*

—— *young*, **H.** k'ta.

sea monster, **H.** hā'nak·atsē (= *canoe receptacle*).

sea otter, **N. H.** k·'ā'sa; **N.** k·'ā'sasqEm, — *blanket;* **H.** k·'āk·ā'sōtl, — *blanket*; **G.** a'ng·usta.

—— *young*, **H.** tsī'sa.

sea snail (*holothuria*), **Tl. H.** ā'las.

sea weed, dried, **H.** tlk·'ast.

to search among, **H.** lē'lt'ak·a (—ak·a, *among*).

secret, **N.** ts'ē'k·a.

to see, **N.** dō'k·oala; d'ō'qtsas, *seer* (*shaman seeing soul of dying person*); **G.** dō'k·ula; **H** d'ō'k·la.

self torture ceremonial, **N.** hawinā'tl.

to sell, **N.** la'qōyō, la'qūt; laqōta'iō, *something sold.*

semiliquid, **L.** k·E'nkya.

to send, **H.** ia'pa.

settee, **N.** goā'tsoas (= *sit in place*).

seven, **N.** ā'tlibū, **G.** matlō's; masEmō's, — *round objects;* matsk·ō's, — *long objects;* matlqtlā'us, — *cups.*

seventeen, **G.** matlâ'sgīu.

seventy, **G.** matlpEnkyâsk·'ā'pōpEna.

to sew, **L.** k·'ā'na; k·'ā'naiō, *thread;* **H.** g'a'na; g'anama'las, *thread.*

shadow, **L.** gyagū'mas.

shaft of double headed harpoon, **H.** mā'siūtl.

to shake, v. a., **L.** iā'wiHelitl, qoā'yusEla, **N.** k·uā'yakula (—akula, *motion* (?)); nā'natlis, *shaking his greatness* (*song*).

——, **N.** —Hila, —Hula; yā'iawiHila, yā'wiHila, *shaking himself* (*host at tsētsā'ēk·a*).

shaman, **N. Tl.** paqa'la, **L. N.** nau'alak·, hē'ilikya (*only when conjuring disease = mender*), **H.** tsā'ēk·a, hailē'kya, **G.** hailigyila.

shame, **H.** mā'Hts'a.

shark, **H.** k·oa'k·oina.

sharp, **L.** ā'iHpa (= *good point*), **G.** ssi'Hpa.

to sharpen, **L.** t'ē'H'it.

sheets, **L.** wā'taiō, **H.** k·'ō'k·oēgya (—ēgya, *back*).

shellfish, **H.** kyāoē'k·am.

shinbone, **N.** —p'ēkyē, ō'p'ēkyē; k·'ōk·oqp'ē'kyē, *knot on lower part of tree* (see *Leg below knee*).

shirt, **L.** k·'EsEnā'ē.

shoe, **L.** t'ē'paiō, **H.** k·ē'naq.

to shoot, **L.** hā'ntlitl, **G.** hā'ntla; hā'ntlEm, *arrow gun.*

shore, far from —, **L.** tlā'tlasatl (see *Ocean*).

—— *to go close to shore*, **L.** lā'gyilis (= *to go landward*).

short, **N.** tsE'kua; tsEkuā'la, *short river;* ts'ē'tsakuila, *to shorten life;* **L.** tsEkuE'qst, *a — man;*

tsu'qpitū, *short* (—pitū, *small*); **H.** ts'Ek'; qā'pHō, *a — man*; **N.** nEmā'lis, *short lived*.

shoulder, **L.** tlā'stlalē, **H. G.** ō'quīna.

shoulder-blade, **L.** pā'lōts, **H.** tlā'k·'-otEn.

to show one's teeth, **L.** Hī's'it.

to shred cedar bark. **A.** tsqa.

a shrew, **H.** tlHsEla'k·s (k·s, *woman*).

to shut door, **L.** kH'E'miHit.

sick, **N. L.** ts'ē'Hila; ts'ē'Hīla nâ'k·oē, *heart sick = sad*; ts'ēnā'tōla, *ear is —*; ts'iHtsâla, *headache (= sick inside)*; ts'E'qk·an hēmenatlama, *I am continually sick*; ts'Eqk·'E'lkEn, ts'Eqk·'ā'-pEsEn, *I am often sick*; **H.** tl'ōqoa'la; tl'ōqoatoa'la, *ear is —*; tl'ōqoētl'aqaua'lē, *mouth inside —*; tl'ōqk·ēa'lē, *head —*; tl'ōqoētlpe'lē, *nose —*; tl'ōqoma'lē, *face —*; tl'ōqstoa'lē, *eye —*; tl'ōqoaqā'ola, *throat —*; tl'ōqoaskyenā'la, *neck near nape —*; tl'ōqēioa'la, *forehead —*; tlōqoaqtlali'·Ela, *inside belly —*; tlōqoapō'ala, *on chest —*; tlōqoala'so, *in chest —*; tl'ōqta'la, *mouth —*; tl'ōqoana'la, *all over —*; tlōqoa'la s gyi'lEm, *tongue —*; **G.** ia'kH.

sick eye, **N.** g'ōgumē'k·Enō.

side of a thing, ō'nutsē; ā'tlanutsē, *one behind the other*; **H.** asā'-nōtsEqtlē, *leg above knee (side of hind part)*.

—— **N.** ōnutlEmāla; hēilkyōtlEnū-tlEmē, *right side of face*; guā'-nutlEmē, *sitting at side of —*; gyōgyokōnutlEmala, *house on each side of —*; gyō'gykōnutlEm-ala, *something — —*.

side of a flat thing = edge, **H.** ōnaqē'.

sinew, **L. H.** ad'E'm.

to sing for pleasure, **L.** sā'lala, **H.** nē'nōya, **G.** hā'na; ha'nqto'a, *— while walking*.

to sing to dance, **N.** dE'nqEla, **L.** k·'E'mtEn (?).

singing master, **N.** nā'k·at, dâ'k·ola, **H.** hā'Hts'as, *distr.* haiā'Hts'as;

the three assistants of singing master, **N.** guā'nutlEmē (= *sitting at side*).

to sink angle, **L.** ts'E'qstEnta k·ē'taiō.

river sinks, **L.** kyō'tla.

Sintlaē, **N.** *ancestor of a gens*; sintlē'k·am, *face of —*; sintlē'pEk·, *flagstaff*.

sinus of hair, **H.** tsī'kyE.

Sı'siutl, *fabulous double-headed snake*, **N. H.** sī'siūtl, **H.** sE'm-sEmspa (= *mouth at each end*).

sister calls sister, **L. N.** nEmē'mak·as (—k·as, *woman*), **H.** mEnū'-yak·s (—k·s, *woman*).

sister, elder, **L. N. H. G.** nō'la.

—— *younger*, **L. N. H. G.** ts'ā'ya.

brother calls sister, **L. N. H. G.** wa'-k·oa.

sister-in-law, **N. H.** gy'imp.

to sit. **N. H. G.** goa—; **N.** goa'qsala, *— in canoe*; goā'goagyilitl, *— in middle of house*; goā'pē, *— in corner of house*; goā'goagilēlas, *sitting down in house without back support*; goā'tsaoas, *settee*; goā'nutlEmē, *sitting along side*; **H.** goā'tsāitl, *— on bed*; goa'-sk·amitl, *— inside a thing*; goagoa'k·itl, *— on top of*; goa'-tsoa, *— on flat thing*; goā'latla, *to sit on planks*; goā'latlEla, *sitting down on chair, on planks*; goa'qtoa, *— on top, point of a thing*; goā'pa, *— on point, front end*; goala', *— on stone*; goā'gyena, *— on long thing*; goaū'ioa, *— on point of a thing*; goa'qtlaē, *— on hind end*; goa'qtis, *— on beach*; goa'sk·am-

ils, — *on round thing outside;* goa'luqtlēas, — *on roof;* goā'qs, — *in canoe;* goa'HTEma, *settee;* goa'qsē, — *outside of house;* **G.** goa'ltl, — *in house;* goa'qtoa, — *on top of, on point;* goa'kyena, — *on long object;* goa'sk·am s t'ē'sEm, — *on stone;* goa'ītlōwa, — *under cover.*

six, **G.** k·'Etlō'q; k·'Etla'sk·Em, — *round ones;* k·'Etla'tsq, — *long ones;* k·'Etlā'iqtla, — *cups.*

sixteen, **G.** k·'a'tlagīu.

sixty, **G.** k·'atlapEnk·'ā'pōpEna.

skales, **H.** gau'm.

skillful boatbuilder, **H.** ā'tl'Eskiō.

skin, **L. N.** tl'ēs; tl'ē'siapē, — *of upper part of arm;* tl'ē'tsēpoē, — *of chest;* tl'ē'tsEqtlē, — *of crown of head;* tl'ē'sEmē, — *of face;* tl'ē'tsitlpē, — *of nose;* tl'ēsī'uē, — *of forehead;* tl'ē'tsanē, — *of hand;* tl'ētsētlqā'oē, — *of inside of mouth;* tl'ē'tsEqstē, — *of mouth;* **H.** k'u'tsE; k'uk'uskyā'nē, — *of hands;* k'utsEmē'kyē, — *of back;* k'u'smē, — *of face;* k'utsikyatlkya'nē, — *of back of hand;* k'uk'utsēā'pē, — *of upper part of arms;* k'uk'usqtā'mō, — *of legs above knee;* k'utsēpō'a, — *of chest;* k'uk'utsī'tsa, — *of feet;* **N.** k'utâ'otl, *skin blanket;* **G.** tl'ēs.

—— *of heels,* **H.** amea'tltsītsē.

to skin, **L.** sā'p'a.

skull, **L.** qā'uik·.

skunk, **H.** ia'qp'ala (= *bad smell*).

sky, **N.** lō'ua, nā'la; nēnā'lanuk, *changing (having) weather;* **H.** lEwa'.

slabs of wood sewed to hand of hawinatl, **N.** sē'quitEm.

slave, **L. N.** k·'ā'kyū, **H.** k·'ā'kō, **G.** k·'ā'HŌ; **N.** k·'ak·akuistā'lista, *making slaves all around.*

slave, a whole tribe enslaved, **N.** ē'iatlEla (*in song*).

to sleep, **L. N.** mē'q'it; mēqabū'tlEn, *I pretend to* —; ky'ē'sEn mē'q'ēqsta, *I do not want to* —; **H.** gy'ā'tla; gy'atlē'qstē, *wanting to* —; **G.** ku'l'itl; ku'l'īlas, *bed.*

sling, **Tl.** yE'nkH'aiō.

slow, **L.** ōya; **H. G.** wē'Hala (= *not fast*), *to walk* —; auā'kya, *to work* —.

small, **N. L.** amā'E; ama'Enqē, *smallest* (= *edge of small*); amā'pitō, *small;* amamēmEnē'q, *small things* (—mEnēq, *small distr.*).

—— *s.,* —pitō; **N.** tsuqpitō, *short;* gyōkpitū, — *house.*

—— *distr.,* —mEnēq; **N.** gyōkmEnēq, — *houses;* quākunamEnē'q, — *boats.*

smallest, —Enqē (= *edge*); ama'Enqē, *smallest;* ts'ētsēqk·E'nqē, — *dancers.*

smallpox, **N.** tlEma'ē (= *boil*), ia'kHim (*cause of evil*).

to smell, **L.** mē'sEla; **N.** aiHp'ala, *good* —; **H.** aiHp'ala is wē'sum, *good smelling man;* ia'Hp'ala, *skunk* (= *bad smell*); ua'qp'ala, — *of smoke;* **G.** Hu'mk·ata.

smoke, **L. N.** koaHī'la; KuaHilanō'kumē, *who has most smoke* (*i. e., always giving feasts*); **H.** ua'qEla; ua'qpis, *smoker;* ua'qp'ala, *smell of* —; uaqoaqtoa, *smoking in walking;* uaqoaqā'qtis, *smoking on beach;* uaqa'tsē, *pipe;* **G.** k·ak·pa, *to smoke;* k·ak·paqtoa, — *in walking;* k·ak·patsē, *pipe.*

—— *hole,* **L.** qsâtla, **H.** waqa'wa.

smooth; **N.** k·ē'tsis, — *beach;* k·ē'tsītl, — *house floor.*

snail, **L.** k·oā'ts'Ek·, **H.** k'oā'tas.

snake, **L. N.** sē'itlEm; sē'ilis, — *in*

belly; **H.** sī'tlEm, **G.** k·a'k·Elk·oa.

to sneeze, **L.** asHī'sit.

to snore, **L.** qE'nt'āla.

to snow, **L. H. G.** k'uē'sa; **H.** k'uē'sainoq, *where it is always snowing.*

snow (on ground), **L. G.** nē'e, **H.** nā'ē; nask·Emā'la, *mountain with snow on top.*

soft, **L.** tElk·.

sole of foot, **H.** t'ē'pEm.

solemn, **N.** beku'm; Bē'bekumlisila, *making solemn in house.*

something in eye, **N.** gyīstō'ē.

son (see *Child*), **H.** hāu'ltsē, *only* —; wala'qtlē, *youngest* — (—qtlē, *hind*); nō'lak·amē, *eldest* —; g'au'loa, *second* —.

—— *chief's eldest son,* **N.** tlēō'lEk·amē.

son-in-law, **L.** nEgu'mp.

song, **N.** ts'ē'k·ala, *winter song* (= Tsētsā'ēk·a, *noise*); baquyala, *summer song* (= Ba'qus *noise*); k·'a'mtEm; tsā'qatla, — *in quick measure.*

soring, **N.** k·'anā'tla.

sorcery (see *To bewitch*).

soul, **N.** bEgua'ē, bEq'una'ē (bEg—, *man*).

sour, **N.** sā'k·a, **H.** ts'ē'qp'a (—p'a, *taste*).

span, **L.** pātl, **H.** ōp'E'nkH.

spark, **L.** anopē'q'it, **H.** pē'gyak·ala.

—— *spark spirits,* **N.** mEnak·itl.

—— *to emit sparks,* **L.** tlE'msa.

sparrowhawk, **H.** t'i'HtēgUs.

to speak, male, **N.** bā'guala, **H. G.** bgua'la (= *man's noise*); bgō'pEs, *good speaker.*

——, *female,* **N. G.** k·ā'kyala, **H.** k·kyala (= *woman's noise*); k·kyapē's, *good speaker.*

—— **N.** iā'k·'antal; iā'k·'ēgyatlEla, *to deliver oration;* iā'k·'antēnoq, *orator.*

to speak with rough voice, **N.** tlā'lawulak·ula.

—— *good of one,* **N.** ai'Hp'aqsta (aiH, *good;* —p'a, *taste;* —qsta, *mouth* (?)); iā'qp'aqsta, *to — bad of one.*

—— **N.** hā'sak·awasuē, *trying to speak loud;* ēiwa'la, *to speak about one's wishes* (*song*).

to spear, **L.** sēkya'.

spider, **L.** yī'k·a. **A. H.** hāuma'qa.

spike (*of spruce, etc.*), **A.** kH'ā'mamō, **H.** mamē'Em.

to spin, **L.** mē'ta, **N.** k·'Emk·ā'.

spindle, **N.** Hi'lp'aqstō.

to spit, **L.** kuī'c'it.

to split, **N.** kuē'q'it, kuā'qsant.

—— *wood,* **N.** tlE'mn'it, **H.** koā'k·—; koak·tā'maluk, *splint in thigh.*

—— *canoe splits,* **N.** hō'uqoa.

—— *cedar bark,* **L.** pE'q'it, **A.** pā'sa.

—— *salmon,* **L.** t'ā'lēk·, **H.** ky'ē'a.

spoon, **N.** ts'ē'qtla, *large* —; **H.** g'ōtal'ō, — *made of mountain goat;* ky'ā'tsenak·; tsyā'laiō, *large* —; **G.** hamdsai'ō (= *eating instrument*).

spring of water, **L.** ts'E'tHEla.

—— *of year,* **H. G.** wīā'gyīoa.

to spudder, **L.** tsEō'quit.

squid, **N.** t'a'k·oa; k·ak·ō'mis, — *in cheek;* t'ā'ēk·ōtl, *where squids are eaten;* **H.** tk·oa.

—— *sp.* (?), **N.** ky'i'nut.

squirrel, **L.** tamī'nas, **Tl.** māl, **H.** tsā'mi.

to stand up, **N.** dlā'uis; dlask·amā'tlin, *I — facing sea;* dlā'witl, — *in house;* dlā'qoē, *proper place of each gens in feast;* **H.** dlaau's, — *outside;* dlā'qolatlEla, — *on top of a long thing;* dla'auwītl, — *in house.*

to stay at home, **N.** nEk·a'; nEk ē's, *always* —; Nak·ō'mgyilisila, *always staying in their own country.*

star, L. t'ō't'ō ; amā'qemis is t'ō't'ō, *shooting* —; H. t'ō'tōa, G. hīhik·ɛdzō'a.

starfish, L. N. k·ātsk·.

steady, L. t'ā'aq.

to steal, N. L. gyilō'tla ; L. gyilō'tlik·, *thief;* N. gyilō'tlē,—*on sea.*

steamer, N. hō'k·ayala, H. qu'ltēala (= *fire inside*).

to steer, H. tla'laʜila ; L. tliʜ'it, — *canoe, pressing paddle from canoe ;* tlō'k·umʜ, — *pressing paddle towards canoe.*

stem of canoe, L. â'kyiūē.

to step on something, N. t'ē'patla.

stepchild, L. k·oao (?), N. wawa.

stepmother, H. ā'patsō.

stern of canoe, L. N. ō'qtlē (= *hind part*).

stick for spreading salmon, H. tlā'qɛm.

"*stick shoe*," N. k·'ā'k·anās.

stomach, L. nā'k·apoē, H. pō'qums.

stone, L. N. H. G. t'ē'sum ; N. t'ē'sumtsɛs, *made of* — ; t'ē'sumgyilak', *made* —.

—— N. H. —a ; N. nɛqkyū'ta, *opposite rocky place ;* kyā'k·a, *founded on stone;* nɛmō'k·oa, *alone on rock ;* wī'nakua, *rocky place ;* H. goala', *to sit on* —.

to stop a water course, N. tsū'pa ; tsātsūpatsī'waē, *stopped mouth of river.*

store, H. tlēaē'les (= *buying house*); tlē'ilks, *storekeeper ;* G. tl'ē'las, tl'ē'lgis, *storekeeper.*

stores of dry salmon, L. hēitlē'laiō.

story, N. nū'yam, *distr.*, nū'nim ; nū'qnēmis, *name of all animals in myths.*

stout, L. pɛntlē'is.

straight, L. N. nɛk·a'la; nɛk ā'qala, *slow measure rhythm* (= *straight down*); H. k·ē'lnakula, *straight ahead ;* N. hayim (*in song*).

strait, H. wunā't'hus.

strap of basket, L. k·'ā'tlin, H tɛna'qōtl.

to strike with fist, N. miʜ'ī't ; miʜstēk·ɛ'mt, —*face ;* miʜ'ī'kyent, — *back ;* mi'ʜila, *drummer ;* H. mēʜa'; miʜptā'ut, *to bend by striking with fist ;* G. miʜi'lis, *drummer.*

—— *against*, N. t'iʜ'ā'tlɛla.

—— H. a'lqa, G. alqa ; alqā'p, — *one another.*

—— *with palm*, H. tlā'sa.

—— *a dog*, H. watsē'la.

—— *with hammer*, H. mōkoa' (see *To bend*).

strong, L. N. tlō'k'uimis ; tlō'kum, *cause of strength ;* G. tlōq.

sturgeon, Tl. hā'nak·ois, H. k·'tlā'is.

to suck, H. tsā'ma ; tsā'mamis, *to suckle.*

sugar, L. ē'kyisilā.

summer, L. hē'ianq, H. G. hāi'nq (— anq, *time of*).

sun, L. tlē'sɛla, N. ā'ta, —*as deity;* H. G. tlē'ʜsioala.

sunrise, N. tōatusɛlagyilis ; H. latusɛlagyilis (= *goes down river on earth*) ; G. k·'ēkyō'ia.

sunset, L. lā'pēta, G. lā'is.

superlative, L. N. H. G. —k·amē ; N. ī'ʜak·amē, *fastest ;* gyē'k·amē, *greatest chief ;* nō'lok·ɛmaē, *greatest fool ;* nō'lasnɛk·ɛmaɛ, *eldest child ;* nɛmō'k·oak·amē, *all alone on rock ;* H. nō'lak·amē, *eldest child.*

supernatural, N. H. tlōkoa'la.

to support, N. tlā'tɛla (= *to make stand*) ; tlā'lamin, *supporter.*

surface of sea, N. H. —tlē ; dlask·amā'tlin, *I stand facing sea ;* gyilō'tlē, *to steal on sea ;* tlatlasik·ō'tlikʜ, *here is a canoe with Tlatlasik·oala* (—kʜ, *present ;* —tlē, *on sea*); H. k·auk·oaʜsɛ-

la'k·tle, *canoe drifting to and fro;* mā'tlēla, *to swim;* **G.** hanēilwa'paqē, *canoe on water.*

to surpass, **N.** k·ā'k·'a.

to swallow, **N.** nEk·olā'laqōm; nEk·E'k', *swallowed* (= *eclipse of sun*); **H.** k·'u'nquit.

swamp, **L.** tsEqtsEk·oa'ls (—als, *outside*), na'Hila.

sweat, **N.** k·ō'sa; **H.** k·ō'Hpis, *sweating.*

to sweep, **H.** ky'ē'tla.

sweet, **L. Tl.** aiHp'a (= *good taste*).

sweetheart, **L.** wā'tela.

when always high swell, **H.** t'ō'qElis.

to swim, **N.** mā; **L.** mā'nakula (= *fish motion*); **L.** tE'msēlaiō (?); **H.** mā'tlEla (*man, = swimming on surface*); mamā'lama, *children trying to swim*; **H.** k'ola'la (*fish*), **G.** k'oā'la (*fish*).

T.

tail of quadruped, **L.** hats'E'qstēe (—qstē, *bottom*), **H.** ha'ts'iqtē (—qtē, *bottom*); **N.** nū'naqstē, — *of wolf* (= *wolf's end*).

—— *of bird,* **H.** nā'kyaqtlaē (—qtlaē, *hind*).

—— *of fish,* **L.** ts'ā'snē, **H.** ts'anē't.

—— *of whale,* **H.** t'ēk·aqtē'; *white tailed fox,* mō'k·'uqt (= *white tailed*); **A.** kuē'qt, *raccoon.*

to take, **N.** aq'ē't.

tall, **L.** gyi'ltEqst (gyi'la, — *long*), **H.** noā'kila.

tallow, **N.** k'ā'tsek; **H.** tl'ā'tai, gō'luk·, — *of mountain goat.*

taste, **N. H.** —p'a; **G. N.** aiHp'a, *sweet;* **L.** tE'mp'a, *salt;* **H.** ts'ē'qp'a, *sour* —.

tear, **L.** koā'kuistoē; tsē'tsāokula, *to weep.*

to tease, **N.** mē'itla.

to tell, **L.** nē'tlasō; — *myths,* **N.** nō'sa.

temples, pElnūtlEmā'ē (= *thin side of face*), **H.** pā'spElē' (see *Ear*).

ten, **G.** k·'ā'pō; k·'ā'p'usk·Em, — *round ones;* k·'ē'putsq, — *long ones;* k·āpō s bEguā'num, *two hundred.*

thick, **L.** wōk.

thief, **L.** gyil'ō'tlik·.

thin, **L.** pE'lpītō (—pītō, *small*); k·ā'tlāis (*person*).

things lying about, **L.** t'ā't'its, **H.** mamē'kyas.

to think, **L.** gyē'gyēk·a.

thirsty, **L.** nā'k·'ēqst (= *wanting to drink*), **H.** tsō'sētlqta (= *dry mouth*), **G.** tsō'sEms, nā'k·abū.

thirteen, **G.** yūduqgī'ū.

thirty, **G.** yūduqpEnk·'ā'pōpEna.

thorn, **N.** k·'ā'k·anē.

thou, **L. N.** sō'wa, yūtl; **H.** k·qsō, k·qsoā'ēoa; **G.** yi'qsō.

thread, **L.** k·'ā'naiō (= *sewing instrument*), **H.** g'a'nEma'las.

three, **G.** yūdu'q; yūdu'qsEm, — *round ones;* yudū'tsq, — *long ones.*

thrice, **N.** yū'duqp'ana.

throat, **H.** k·'u'nkoas (see *Neck*).

through, **H.** —sīoa; tqsī'oa, *to jump* —; laqsī'oa, *to go* —; maqsō't, *to throw* —.

to throw, **N.** mā'k·a; mak·ā'p, — *one another;* mak·'ā'lō, *stick of shaman for throwing* (—ing, *instrument*), mā'mak·a, *trying to* —; maq'ē't, *to drop;* **H.** maqsū't, *to* — *through;* maqsō'stūt, — *up;* maqtlā'lisa, — *into fire;* mā'k·'ak·a, — *among;* mak·a'neqant, — *along;* ma'qautlts'ōt, — *out of;* ma'qtsōt, — *into;* mak·a'qōt, — *down;* **G.** mā'quit.

—— *into canoe,* **N.** lEkyâ's; lā'lakyutsē, *throwing every one into canoe.*

to throw, "to throw song out of canoe," k·'amt'ɛmō'tltūt (k·'ā'mtɛm, *song;* —ōtlt, *out of canoe;* —ut, *v. a.*), (*i. e., a singer in the canoe which goes to a feast greets the host with a song*).

—— *into water,* **H.** huē'tltaut (*man, animal*), ts'aqsta'ūt (*a stone,* —sta, *water*).

to throw, **H.** ts'ɛk·anu't, — *towards;* ts'aqsiaa'lsa, — *ashore;* ts'ɛqā'-litlila, — *into house.*

to throw copper, paddle, board (flat objects (?)) into house, **N.** sɛpā-alitlɛla.

thumb, **L. N.** k·ō'ma, **H.** k·ō'na, **G.** k·auna'; **H.** kōna'hsītsē, *big toe* (—hsītsē, *foot*).

thunder, **N.** ku'niqua; ku'nuatɛla, *noise of* —; ku'nquakyasō, *what a* —! **G.** lu'qlisla.

thunderbird, **L. N.** Kunkunqulī'kya, **N.** ts'ō'na; ku'n'ōas, *home of* —.

tide (current), **H.** ts'ā'la.

to tie, **N.** mōq; mō'qpɛk·, *heraldic column (pole to which [blankets] are tied),* **L.** mō'quit; **N.** mōq-sak·ā'o, *with tied penis;* **G.** muk.

time of, —ɛnq; **L.** hē'ianq, *summer;* tsāwu'nq, *winter;* **H.** tlīɛ'nq, *potlatch;* hāl'nq, *summer;* tsā-wu'nq, *winter;* **G.** hāinq, *summer;* tsōnq, *winter.*

—— *to be on time,* **N.** hē'ilts'a (see *Right*); wī'ts'a, *not on time;* nīō'sukulla, *making that there is no time to escape.*

tired, **N.** mā'mɛntlēas, *making him* —; mɛ'ntl'ēt, *tired of eating certain things;* **H.** tlā'lasō.

Tlamē'latsē, **N.** *house in which tsētsā'ēk·a is held.*

tobacco, **L. N. H.** tlā'uk·.

to-day, **L.** qoanā'laq, **H.** ġoa'k·'ɛlaioq.

toes, **N.** k·oā'k·oasītsē (—sītsē, *foot*), **H.** k·oā'k·oahsītsē (—hsītsē, *foot*).

—— *big toe,* **H.** k·onā'hsītsē, (= *thumb of foot*).

together, **N.** k·'apē'; k·'ā'pēg·atl gyā'qɛn, *they will come together to me;* k·'ā'pēg·awāstlis, *they will come together to you.*

—— **N.** ha'mk·olisɛn, *I eat with you.*

—— **N.** gyinlīkyɛlē, *parents with children.*

—— **N.** nɛmā'la, **A.** wē'wauk'ua'si.

to-morrow, **L.** tlɛ'nstla, **H.** tla'ns-tlats.

—— *day after to-morrow,* **H.** tli'nsē-tlats.

tongue, **L. H. G.** gy'i'lɛm.

tongs, for pulling out hair, **L.** k'ulai'ō (= *pulling instrument*).

—— *for taking stones out of fire,* **L.** ts'ē'stlala (—tlala, *fire*); **H.** k·oē'sten.

tooth, **L. N. H. G.** gyīgy; **N.** gyī'-gyatlɛn, *I have —ache;* gyī'-sɛqstâl, *cover of box* (= *teeth around* (?)).

—— **N.** (ōhwē), —hē; k·aqhē, *having lost a tooth* (= *notch tooth*); nae'nshē, *with decayed teeth;* lōphēpitō, *you have no teeth;* **H.** —hsiā; tsē'tsēhsia, *having lost a tooth;* lē'k·'ehsia, *having lost all teeth;* hā'pēhsia, *chin beard* (= *hair tooth*).

top of —, **L. N. H.** —qtlē; **L.** mā'kyaq-tlaowē, *top of tree;* k·'ā'msiqtlē, *lazy on top;* tl'ē'tsɛqtlē, *skin of crown of head;* **H.** gā'luqtlēas, *to sit down on top of* —.

—— **N.** —ōqtoē, **H. G.** —qtoa; **H.** goa'qtoa, *to sit on* —.

—— *a pile,* **N.** ōky'ē; ōkuyalis, *on top of a pile on beach;* ō'magya-lis, *highest of all* (?); **H.** —koia, —kyīoa; tōkoia', *to walk over a*

pile of planks; goau'ioa; **G.** goa'gyioa, *to sit on a pile.*

top of basket, box, **N.** —kyaē; wē'-kyaē, *not quite full;* **H.** ky'ā't-gyōt, *to paint inside of box.*

torch, **H.** anō.

to touch, **N.** tlō'pala; mā'kyapala, — *almost;* mākyitlē'sela, *almost touching roof.*

towards, **H.** —alut; tquā'lut, *to jump* —; gy'ē'qoalut, *to run* —.

town, **N.** gyōk·, **H.** gō'kula (= *houses*).

trail (see *Road*), **N.** la'qsō, *to walk on* —; **H.** tō'wi.

trap for fish, **N.** mō'ē; mā'muqsila, *taking care of* —; **G.** ā'mala.

trap for game, **A.** kHpaiō, lā'um.

to travel, **N.** ē'iowa; sē'qoa, — *in canoe;* k·unē'sta, — *about* (—ēsta, *around*); K·unēstā'lagyilis, *always traveling about.*

tree, **L.** tlā'qɪlos, **A.** k·oā'as, **H.** lEk·oa' (= *fuel*); k·oaaiyō'k·ula, lEk·oa'gyila, *country full of trees.*

—— **L. N.** —mis; k·'oā'tlmis, *salmon berry bush;* qā'qumis, *pine;* paā'qmis, *maple* (= *leaf tree*); iaiaqpā'lamis, *fir;* tl'ā'qomis, *alder* (= *red tree*).

to tremble with hands, dancing, **L.** qō'lēqōla.

tribe, **N. H.** lē'lk·olatlē, **N. G.** gyō'-uklōt; **H.** gō'uklōt (= *village community*).

to troll, **H.** k·'ē'ma, dō'koa.

to be troubled, **N.** nō'tla, tsīnaqua'la (*in song*).

trousers, **L.** k·qsis.

trout, **L. N.** k·ō'la, quitlâ'la, **H.** tk·ā'nē; gōlē'stē, *speckled* —.

trumpet, **N.** ts'ē'kōkyala, **H.** ky'ē'-kyala (—kyala, *noise*).

to try, **N.** wā'Hsala, *let us try!* hā'-maa, *trying to eat;* nā'nak·a, *trying to drink;* kwa'na, *to try;* **H.** hā'mats'a, *trying to eat.*

Tsētsā'ēk·a (winter dance), **N.** tsē-tsā'ēk·a (= *the secrets*).

—— *house in which — is held,* tlamē-a'tsē.

—— *host giving* —, yē'wiHila (= *shaking himself*).

Tsimshian, **N. H.** Guē'tEla (= *north people*); **H.** Atlā'itq, *a tribe living west of the Qaē'qaes;* Mes-mā'miHt, *tribe of Metlak·āhtla;* Guē'tEla, — *language.*

Tsōnō'k·oa, a fabulous woman (ts'ō'-na, *thunderbird;* —ō'k·oa, *female* (?)).

turned upside down, **H.** k·pē'tla; k·pē'tla·itl, — *in house* (see *To capsize*).

to turn round, **L.** k·ui'sk·EmH'it (—k·Em, *face*); mE'ls'it.

tide turns, **H.** ts'ā'ista (—sta, *water*).

twelve, **G.** mātlgī'ū.

twenty, **G.** mEntsq.

twice, **L.** mā'tlp'ana.

twig, **L.** mā'mēē.

twins, **N.** tl'ā'lēatsē (—atsē, *young*).

two, **N.** mātl; Mā'tsEmEnk·olāwis, *always carrying two round ones in each hand;* **G.** malō'q; mā'sems, — *round ones.*

two hundred, **G.** k āpōs bEguā'-num (= *ten men*).

U.

ugly, **N.** iakyā'oē (= *bad forehead*).

uncle, **N.** k·ulē' (*addressed*), **H.** qtlEmp.

to uncover face, **L.** lō'sEmHit (—sEm, *face*), **H.** t'E'lk·Emtl (—k·Em, *face*).

under, **N.** pEn'a; pEn'a'tsē, *lower side;* bē'bēnak·aua, *the lowest;* —aboē, *underneath;* aoā'boē, *underneath;* halqabo'ē, *to kill*

— ; **H.** oā′poa ; wunk·ā′poa, *bottom, lower side* (= *edge underneath*); ēsā′poa, *lower side ;* mā′taput, *to fly under ;* tōā′put, *to walk under cover.*

unexpected, **N.** k·′oē′ʜit′ā′āstl, *happening unexpectedly.*

to unload canoe, **N.** mō′tltōla ; **H.** wā′mōtltut (— ōtlt, *out of canoe*).

unsteady, **L.** gyE′tʟa.

to untie, **N.** k·uī′tla ; k·uī′tlaqala, *to untie from trees* (—aqa, *down*).

upper part of river, **N.** nā′laē ; nE′lpē, *house highest up river ;* nē′nelgyas, *country highest up river ;* nē′ltse, *up river.*

up, **N.** —usta ; lagyustâ′la, *to ascend;* NEmōkyustâlis, *the only one coming out of ground ;* k·′ē′ʜustâl, *washerwoman* (= *hanging up*); gyalamustâla, *salmon first ascending river ;* tl′Epustâla, *to ascend mountain ;* gyā′qustâ, *to come up ;* tsū′ʜustut, *to hold up;* wī′kyustoa, *not to be able to hold up against ;* k·asustâla, *to walk up ;* **H. G.** —ōstēoa ; lā′kōstēoa, *to walk up ;* d′ōqsōstē′wala, *to look up ;* tQsōstē′oa, *to jump up.*

to turn upward, **H.** d′ā′tēk·ēila.

to urinate (*male*), **H.** kn′E′lk·oa.

to urinate (*female*), **H.** aiā′sa.

urine, **H.** kniloqpē′s.

useless, **N.** gyōkk·′ā′laam, — *house* ; **H.** a′mtla ; a′mtlask·am, *a strumpet.*

uvula, **H.** mE′smEs.

V.

vein, **H.** haia′spēatsēe.

vertebra, **H.** k′ō′tsō (see *Bone*).

village, **N.** gyōq, **H.** gōk′, **G.** gyōq ; **N.** gyōqtEms, **G.** gyō·qtEma, *village site.*

virgin, **N.** ky′ēa′la.

to visit, **N.** ē′wak·itq, *whom everybody visits.*

volcano, **A.** tlumqamā′qis.

to vomit, **L.** hâ′qo·it, **N.** hō′k·oa ; hauk·uā ! *vomit!*

W.

waistcoat, k·′ē′qsawok·.

to walk, **N.** k·a′sa ; k·ā′sEltsue, — *on flat object ;* k·ā′tsētlanē, — *on log ;* k·ā′seqala, — *down ;* k·ā′tsēstāla, — *around ;* k·ā′sustâla, — *up ;* k·asEnqEntāla, — *along edge ;* k atsnūtsEntāla, — *along long object ;* k·ak·askyinā′la, — *and find ;* **L.** lā′tlEn k·ā′sat, *I* — ; k·ak·sâ′lagyilis, *walking together ;* k·autlanēā′la, *to walk meandering ;* **G.** k·ā′tlōwa, — *on road ;* k·a′ldzoa, — *on plants ;* k·atlna, — *over log ;* k·ā′tsistala, — *around.*

—— **G.** lātus, *to walk down river ;* lā′qa, — *down ;* lā′kʜtīwa, — *up.*

—— **N.** tayukuinā′la, — *and find ;* tāyōk·oa′lagyilis, *walking together ;* **H.** tōnō′olsa, — *along ;* tōā′put, — *underneath ;* **A.** tō′quit (**N.** = *war dance*).

—— **G.** sī′Q′uit, — *up river.*

—— *on trail,* **N.** ts′ē′k·oa.

—— **N.** hauqsâ′yō, hauqsâ′lo, — *on trail ;* hōqsta′la, — *into water* (—sta, *water*).

—— **H.** uaqoaqtoa′, *to smoke walking ;* **G.** ha′mstoa, *to eat walking ;* ha′nqtoa, *to sing walking ;* k·ā′k·paqtoa, *to smoke walking.*

—— *softly,* **N.** sE′ltala.

wall, **L.** tsā′k·am ; **N.** gyōk·opa′sila, — *at point ;* **H.** gāuwi′m.

wanting to, **L. N.** —ēqst ; mē′q′ēqstEn, *I want to sleep.*

not obtaining what one wants, **N.** wī'ūtl.

war, **N.** hō'utlō, *to go to* — ; **H.** ts'ē'kyatla.

—— *dance*, **N.** tō'q'uit (see *To walk*).

warm, **N.** ts'ᴇ'lqua ; ts'ᴇ'lquat, *place where it is warm* ; **H.** kō'qoa, **G.** ky'u'qula.

to warm one's back, **L.** pᴇnē'kyalitl (—ēkya, *back*).

warrior, **N.** winaē'noq ; ā'lislalits, *great* — (*perhaps victorious*).

to wash, **L.** tētēk·ᴇmh'it, — *face* (—k·ᴇm, *face*); lā'asta, — *body* (= *to go into water* ; la, *to go* ; —sta, *water*) ; tsᴇ'ntsᴇnk·oa, — *hands* ; **H.** ts'ō'tsoqma, qau'sᴇmt, — *face* (—sᴇm, *face*) ; ts'ō'qoēta, — *body* ; muqsta', — *body* (—sta, *water*); ts'ō'k·oa, — *hands* ; dēi'sēta, — *with cedar branches* ; ky'l'lpa, — *clothing*.

washbowl, **H.** ts'ē'koisk·ᴇm (—k·ᴇm, *round*).

watchman, **L.** k·'ā'k·ala (see *To hear*).

water, **L. N.** wa'p, **H.** waa'm.

—— **N. H. G.** —sta ; **N.** k·'ola'sta, *water of life* ; tsuqsta, *to jump into* — ; koā'asta, *cup* ; **H.** tlqsta'ūt, *to push canoe into* — ; tqsta, *to jump into* — ; nak·a'msta, *cup* (= *drink water*); **G.** gyūqstā'is, *house in* —.

—— is, *in sea*, **N.** k·'atsī's, *bottom of sea* ; nā'nīs, *bear in sea* ; **H.** k·aliā'ois, *anchorstone*.

—— *on water* (see *Surface*).

wave, **L.** k·ᴇlē'e ; aqumā'lē, *breaking wave* ; **H.** ganᴇ'mala.

we inclusive, **L. N.** nō'guamᴇnts, **H.** nō'guants, **G.** nōguā'nis.

we exclusive, **N. G.** nō'guanuq, **H.** nōgua'ntk'.

weak, **G.** wē'tlimas (= *not strong*).

weasel (*Putorious*), **N.** gyēgyi'lᴇm (= *climber*).

weather, **N.** nā'la ; nēnā'lanuk, *having* — (*i. e., being able to change* —).

to weave basket, **L.** yi'p'a.

—— *cedar bark mat*, **Tl.** ky'ē'ta ; ky'ē'tamitl, *weaving frame* ; **H.** tlē'huila.

—— *rush mat*, **L.** ō'ta.

wedge, **N.** tlᴇ'mkyaiō, **A.** tlā'nut.

weir for fishing, **N.** mō'a, **A.** kō'lem, **G.** mā'mēas.

west, **H.** qā'īs ; qā'ēqaē, *western people*.

whale, **N. H. G.** k·'o-i'm ; **N.** k·oē'gyilak', *made a* —; k·oā'iastᴇms, *place of whales*.

—— **Tl.** t'ōto'sk·amis (*a. p.* (?) *perhaps* = *star face in sea*).

whetstone, **L.** t'ē'kyaiō.

whirlpool, **L.** k·ō't'is (—is, *in sea*).

whirlwind, **L.** halō'pēk·a.

whiskers, **N.** hāpqstē'e (= *mouth hair*).

to whistle, **N.** hō'uqoa.

whistle, **N.** mᴇtsē's, — *of hā'mats'a* ; ts'ē'kōkyala, *trumpet* ; **A.** k·oa'k·'ōmōlaku'la, — *of mē'itla* ; ky'ē'kyala, *trumpet* ; k·ōs, — *of tloola'qa* ; tē'qatsk, — *of tsā'ēk a* ; **H.** huē'k·oa, — *small*.

white, **L.** mᴇla', **H.** mō'k·oa, **G.** mō'qstō.

white blanket, **H.** kye'lqsᴇm.

who is that? **A.** ak·oiqk·au.

wide, **N.** lē'qō ; lē'qōis, *wide beach*.

widow or widower, mourning, **N.** āa'msila, **G.** g'oā'itlōwa (= *sitting in house*).

widow, **N.** bᴇky'â'sit (= *without man*).

widower, **N.** k·ᴇky'â'sit (= *without woman*).

wife, **N. G.** ganᴇ'm ; **N.** ganᴇ'mtl, *future* —; **H.** g'anᴇ'm.

wild, hā'mats'a growing —, **N.** quā'sa.
wind, **L.** iā'la; iā'oapsem, *sail;* iau'apek·, *mast;* **H. G.** iuā'la; **H.** iuā'lis, *place where always wind;* iai'uaspek·, *mast;* iai'uastem, *sail;* iai'uatsk, *hoisted sail;* **G.** iai'uatsem, *sail;* iū'p'iq, *mast.*
—— *north wind*, **N.** ts·ā'k'oa. **H.** tsāk'oa'la.
windpipe, **H.** pētseqā'ō (—qāō, *neck*).
wing, **H.** mā'tlmatem (see *To fly*).
—— *first feathers of* —, **L.** p'e'tlem.
—— *hind feathers of* —, **L.** ts'e'lkhim.
winter, **L. N.** tsawā'nq, **H.** tsawu'nq, **G.** tsōnq (—anq, *time of*).
wise, **N.** nō'k·at; nā'k·atsē, *the great wise one;* nō'k·amō, *born wise;* nanō'ak·aua, *the wisest one;* **H.** nō'ak·aua, *the wisest one.*
to wish, **N.** ā'hula.
wolf, **L.** ā'tlanem (see *Inland*); **N.** *Nuqnemis name*, Nūn; Nūnkyē'qtoē, *chief of* —; **Mamalēlck·ala**, ōlē'kyin, **H.** k'use'ls, **G.** asila', tl'esyegumi'h.
wolverine, **N.** wā'gigya, nā't'bēē.
woman, **L.** tsetā'q.
—— **L. N.** k·aky—; **N. G.** k·ā'kyala, *woman speaks* (= *woman's noise*); **N.** k·āqk·ēkyā'la, — *is always talking;* **H.** k·ky—; k·kyala, *woman speaks;* k·kyapē's, *female talker.*
—— **N.** —k·as; —k·a; nemē'mak·as, *sister;* k·ōk·otsaqsemā'lak·a, *Koskimo woman;* hai'atlilak·as, *mending woman* (= *female shaman*); ts'ō'tlemak·as, *granddaughter;* ā'tak·a, *pet daughter;* nē'nenk·as, *bear woman;* **H.** —k s; menū'yak·s, *sister;* tlhsela'k·sa, *shrew;* ts'ō'qtlemak·s, *granddaughter;* g'auioa'qtlēk·s, *second daughter;* hau'ldsēk·s, *only daughter.*
woman, **N. H.** —aqsem; **N.** Nimk·ēa'qsem, *Nimkish woman;* Guā'gulaqsem, *Kwakiutl woman;* **H.** Awī'wiky'a'qsem, *Awiky'ē'noq woman;* Bī'bilqula'qsem, *Bilqula woman;* k·oē'k·oēhtēnoqa'qsem, *K·oēhtēnoq woman;* Tlatlasik·oa'qsem, *Tlatlasik oala woman;* Hēiltsōk·oa'qsem, *Hēiltsuk· woman,*
—— **N. H.** —ūk·oa, —ōk·oa, —*in names;* **N.** A'nk·oalayū'k·oa, *making it cloudy;* Lālak·'aiyū'k·oa, *made to go ahead of all;* Tsōnō'k·oa, *thunderbird woman* (?) **H.** Tlālētlilayō'k·oa.
womb, **H.** mā'eōtlatsē.
wonderful! **Tl. N.** sā'kyas, auī'la (= *real*).
wood on beach, **L.** k·'ē'qatl.
—— *dried*, **A.** kyā'p'as.
—— *damp*, **A.** ts'ē'mos.
woodpecker, red-winged, **L.** sā'k·oala, **Tl.** tlā'tlanitl, **L.** tlā'tlanhē'k·, **H.** tlā'tlapēkh.
wool of mountain goat, **L.** p'ā'lem; pelpela'sk·em, *blanket of* —.
wool and fine hair, **H.** kyā'tlhema.
word, **N.** wā'tldem.
world, **N.** wī'nakuis.

Y.

to yawn, **L.** hā'hila.
yellow, **H.** tē'qa.
yes, **H.** la'a, **G.** kyaā'.
yesterday, **L.** tlā'nsutla, **H.** tla'ntsē.
—— *day before yesterday*, **H.** tlā'ntsēēdea.
yew tree, **Tl. H.** tle'mk·a.
you, **H.** k·aēk·soā'ea, **G.** yii'qsō.
young man, **L. N.** bā'bakum, **N.** hē'itla.
young of —, **N. H.** —atsē; **N.** mā'matlatsē, *half breed* (= *young of European*); k·'ō'tsatsē, — *crab;* **H.** tsāēa'tsē, — *beaver.*

The Life History of Certain Moths of the Family Cochliopodidæ, with Notes on their Spines and Tubercles.

By A. S. Packard, Providence, R. I.

(*Read before the American Philosophical Society, February 3, 1893.*)

I am under special obligations to Miss Emily L. Morton for the eggs of several species of this family, which gave me the opportunity of rearing them and thus of observing the freshly hatched larvæ of species of three genera of this most interesting group, none having heretofore been described, unless we except a very brief notice in Buckler's *Larvæ of the British Butterflies and Moths* (iii, 76) of the freshly hatched larva of *Heterogenea asella*, as follows: "As well as my strongest lens would show them to me, these very small specks of creatures were of an ovate, roundish figure, dark brown above and pale greenish beneath—in short, miniature representations, apparently, in all respects of the mature larva."

I was very eager to learn whether the freshly hatched larva of any of this group was born in the form of the fully grown larva, and entirely without abdominal legs, or whether its body might not be more generalized in shape and structure and with the vestiges at least of such legs. The result appears to be that, the young larvæ are, so far as known, without traces of abdominal legs, and that while those of the more specialized though primitive genera, as Adoneta and Empretia, are born with the tubercles already nearly as much specialized as in the full-grown larva, in the more modified genus Lithacodes (*L. fasciola*), the body is much more cylindrical and simpler, and thus more modified than in the foregoing genera, being without tubercles, but with forked glandular setæ.

Another result of great interest is that the shape of the young larva of Adoneta and also of Empretia, with their large tubercles bearing three radiating setæ or bristles, is such as to remind us of the larvæ of the Saturniidæ, and to suggest one of two alternatives, viz., (1) either the Cochliopodidæ have originated from the Saturniidæ or forms allied to them; or (2) both the Saturniidæ and Cochliopodidæ have descended from a common stem-form, and this perhaps some Notodontian.

At all events the systematic position (and in this connection I may say that the pupal and imaginal characters bear me out) of the group represented by Limacodes and its allies is very near the Saturniidæ, and not far from the Notodontians. It would seem as if the oldest, most generalized, or less modified forms, viz., the original ancestors, were the tuberculated larvæ of Euclea, Adoneta and Empretia, as they are more like the larvæ of other Bombyces, particularly the Saturniidæ and Notodontians. On the other hand the nearly smooth slug-worms, without hairs or tubercles when fully grown (such as Limacodes and Heterogenea), seem to be the most aberrant and modified, viz., have become the most adapted to the peculiar mode of larval life emphasized by the term "slug-worm;" these

being caterpillars which have lost by disuse their abdominal legs, the thoracic ones being greatly reduced in size, while by their sluggish disposition, by their slug-like, slow gliding mode of progression, and by the peculiar coloration of such forms as the larval Heterogenea, which mimics the red, swollen spots on the leaves of various trees, particularly the oak, chestnut, wild cherry etc., we have, as the result of gradual modification brought about by adaptation, perhaps the most strange and bizarre type of Lepidopterous larva in existence.

Thus, as a result of adaptation, probably brought about by a series of causes unlike those affecting any other caterpillars, we have larvæ which, as in that of *L. fasciola* and also the larvæ of Packardia, are entirely green, oval in form, and which we have noticed might easily be mistaken for a fold or bend in a leaf. These smooth bodied, unarmed slug-worms are protected (1) by their oval shape, the expanded edges of the body appearing to merge into the surface of the leaf; (2) by their sluggish almost imperceptible gliding motions; (3) by their pale pea-green ground color, with faint yellowish or reddish shadings on the more exposed ridges and projections of the body. These and other wholly green ones may have been eliminated during the struggle for existence from the earlier, tuberculated genera by their resemblance to green galls or swellings on the surfaces of leaves. That the larvæ of Heterogenea, such as *H. flexuosa* and *H. testacea*, are wonderfully similar to the red dipterous or aphidid galls on oak and other leaves was first suggested to us by the late Mr. S. Lowell Elliott,* and since then we have frequently verified his observations, and been struck with the wonderful resemblance between these larvæ and the small reddish and greenish galls which appear late in summer on the leaves at the time when the larvæ themselves become fully grown. These forms being thus protected from observation and harm, do not need the armature of the other group, the tubercles and spines have disappeared through simple disuse; while being without poison-bearing spines, they have also lost by disuse the bright colors and conspicuous spots of the armed genera. On the other hand, the larvæ of Adoneta, Empretia, Euclea and allied forms, with their remarkably bright colors and markings, and poison-bearing tubercles, feed conspicuously, the warning colors and showy ornamentation repelling the attacks of birds. We are inclined to the belief that the armed slug-worms were the earlier, from the probability that in the Coleoptera the earliest and most generalized groups were the Staphylinidæ, and the carnivorous Carabidæ, and allies, while the later, most extremely modified forms were the Weevils and Scolytidæ, in which the larvæ are footless. In the Diptera also it is not improbable that those families with the most perfectly developed larvæ, such as the Culicidæ

*Compare the remarks of Mr. Poulton on the meaning of the peculiar method of progression in the larvæ of Cochliopodidæ in *Trans. Ent. Soc.* of London, 1888, 591, wherein he states that Mr. Tate could not remember any object which the larvæ of *H. ostia* resembled. Mr. Poulton remarks that they "may suggest the appearance of some kind of gall on the surface of the leaf."

and Tipulidæ, were the earliest and most generalized types, while the Muscidæ, with their apodous maggots present the extreme of modification though not of specialization, and so with other apodous insects and apodous Arthropoda in general.

To return to the Cochliopodidæ: the great difference between the tuberculated and spinose and the smooth, unarmed genera show that the forms were more or less plastic, and though all of them are born without abdominal legs, yet after atrophy had taken place, the larvæ of different genera became exposed to quite different surroundings and stimuli, and responded to such varied changes with the result seen in the numerous genera characterizing the eastern regions of North and South America, as well as Southeastern Asia; Europe only possessing two species, and none being yet known from the Pacific slope of North and South America.

It will, of course, be a matter of great interest to examine the embryos of this family in order to determine how late in embryonic life the abdominal legs disappear, for, undoubtedly, as in the embryos of such Lepidopterous larvæ as have been examined by embryologists, each segment bears a pair of temporary embryonic legs. Probably the legs are represented by the transversely oval ventral areas or muscular folds on each segment of the abdominal region in the slug-worms.

As a result of studies with larvæ and moths I may add that the genus Heterogenea is more largely represented in the United States than formerly supposed, and the genera Kronea and Tortricidia are with little doubt synonyms of Heterogenea, the characters which I originally employed not being of generic value.

The Life History of Empretia stimulea Clemens.

I am indebted to Miss Emily L. Morton, of East Windsor, N. Y., for the eggs of this interesting form. The larvæ hatched July 9 to 12 at Brunswick, Me., from the eggs sent a few days previous.

Egg.—As usual in the family, an irregular, oval, flattened, scale-like body, with a very thin edge; under a half-inch objective the shell is seen to be thin, transparent, and without any markings. They are laid in an irregular mass, partly overlapping each other. Length, 1½ to 2 mm.; breadth, 1 mm.

Freshly Hatched Larva.—Length, 1.2 mm. The body is broad and high, about three times as long as high, but much more cylindrical than in the full-grown larva. The head is pale and the body is pale straw-yellow. The eyes are black and distinct. The prothoracic segment is large, somewhat hood-like, not bearing any visible tubercles, but with two obsolete warts, giving rise each to three hairs. The other segments are in this stage distinctly marked, especially dorsally and ventrally. On each of the second and third thoracic, and the first abdominal segments is a pair of high conical tubercles, which are moderately thick at base, and nearly as long as one-half the thickness of the body, each giving rise to but three

setæ, which on the average are about three-fourths as long as the tubercles; *the first (mesothoracic) pair are as large as the second and third, all being alike in shape, length and size* (Fig. 1).

Succeeding the three pairs of large high tubercles are five pairs (on segments 2 to 6) of tubercles which greatly contrast in size with those at each end of the body, being very much smaller, only about one-third as high as the others, or about one-half as high as the others are thick in their middle. On the end of the body are three pairs of large tubercles, the first pair of these (on abdominal segment 7) being larger and thicker than those on the thoracic and first abdominal segments; those of the pair on the eighth segment are about as large as the pair in front, but those on the last pair (on the ninth segment) are about one-half as large and long as those on the eighth segment. They all bear only three setæ each.

The setæ or hairs appear under a half-inch objective to only taper like a simple seta, the tip, however, not being acute, neither very blunt; but under a higher power (⅛ obj. A. eyepiece), the points are seen to be divided or forked, but with only two divisions. Fig. 2 represents a tubercle highly magnified, showing the finely forked glandular setæ, each of which is moved by a retractor muscle (*m*).

Larva. Stage II.—Length, 5 mm. The three anterior pairs of tubercles are paler, the largest (hinder) thoracic pair much darker reddish purple. Between the first and second dorsal pair of tubercles are two parallel dorsal rows of three pale dots, forming two short parallel broken lines. A yellow spot between the two larger tubercles, and in front is a fine transverse line connecting two yellow dots, and a similar smaller mark behind the yellow spot. Three similar marks, *i. e.*, a yellow median spot and two transverse lines at the base between the abdominal tubercles. The brown-and-white edged lines nearly enclose each set of tubercles as before. The body is green and straw or lemon color above, and greenish amber low down on the sides.*

Stage III (?).—(July 23.) Length, 6 mm. The ten anterior fleshy appendages are all pale lilac; those in front the paler; the second dorsal pair about one-third larger than the first pair, and the third pair about one-third larger than the second, and nearer together at their base; the latter are deeper purple, and are dark at the end. The large pair near the end are also purple, and only slightly larger than the second anterior

*Miss Multfeldt thus describes the young, probably in Stage II, as she observed them at St. Louis: "Late in August of the present year I found quite a colony, probably ten or twelve, on a single leaf of the above-mentioned tree. They had but recently hatched, but tiny as they were—not more than an eighth of an inch in length—*they had all the tubercles and other characteristics of the mature larva*, except that the saddle-cloth-like spot was deep yellow instead of green and the central dorsal spot pinkish gray. They had perforated the leaf with small irregular holes. Not thinking that they would readily loosen their hold on the leaf, I carried it carelessly in my hand, and when I reached the house was much disappointed to find that but two larvæ remained on it. As these thrived and perfected their development to the point of enclosing themselves in cocoons, it is evident that maple may be included in the list of their food-plants" (*Bull. Div. Ent.*, 13, 63).

pair. The small pair of dorsal ones near the end are greenish yellowish. The two lateral ones in front on each side are about three times as large as the eight on each side behind them, and they are purplish, while those (the eight) behind are pale greenish.

On the back, behind the first pair of appendages, are two parallel purplish longitudinal patches, with the pale whitish median line between them, and behind them are two dark patches, also separated by the median line. Between the second and third pair of appendages is a transverse dark brown stripe, which passes around behind the appendages but does not meet behind, and behind it is a roundish yellowish median patch; behind this patch, between the bases of the two appendages, is a short transverse white line. The tip of the body behind is lemon-yellow, and on the second, third and fourth segments behind the third pair of appendages is the saddle-like median spot. It has a median oblong lilac-brown patch, bearing two transverse broken white short stripes edged with brown. On each side of this patch is a white border with three scallops externally, and edged with black, the black line forming three scallops. The two large purple posterior appendages are partly surrounded at base by a brown curved line, the two not meeting in front or behind, and between the bases of the long conical fleshy tubercles are two linear dark stripes. The rest of the body is pale greenish, with a slight yellowish tint. The appendages have each slender purplish spines of quite even length. It is bright colored and showy, and must depend on its spines for immunity from attack.

It feeds in this stage on the upper surface of cherry leaves, eating off the surface, leaving large dark patches. Crushed one of the small ones, and found the hairs painful and annoying to my hand.

Stage III or IV (?).—Length, 7–8 mm. The thoracic segments—*i. e.*, all the region bearing the anterior tubercles or papulæ—is now dark reddish brown; the third, or hinder thoracic tubercles, dark reddish brown, and the yellowish dots and lines are obsolete, only the bright yellow spot behind the third pair of thoracic tubercles being left. The two anterior pairs of tubercles are much paler than the third pair and the pair on the eighth abdominal segment. The last pair on the end of the body are pale amber. The lateral papulæ or tubercles are still green. The yellow dorsal region between the thoracic and abdominal papulæ is now yellow, edged with white on the side low down, and in front and behind are white borders edged part of the way with dark reddish brown. In front of and behind the "saddle" are two twin dark dots. The saddle is plain brown, oval, cylindrical, bordered with white, which is edged within with rosy, and, on the outer edge, with dark brown, this border being interrupted in front and behind, opposite the twin dark dots. All around, and at the base of the large tubercles on the eighth abdominal segment, the back is dark reddish brown with a median yellow spot, and behind on the next segment are two large oblique oval white spots, meeting on the middle of the body, and faintly tinged with lemon-yellow.

Full-fed Larva.—Length, 20 mm.; breadth, 7 mm. The body is very thick and stout, nealy one-half as long as broad, the dorsal surface regularly convex, being well rounded above, a little wider in front than behind. The prothoracic segment, with no tubercles, forming a hood for the head, which is dull amber colored with darker spots. The second thoracic segment with four spinulose fleshy conical tubercles, the dorsal ones slightly larger than the lateral ones. Similar ones on the third thoracic segment, but they are a little larger. On the first and eighth abdominal segments are two very large diverging horn-like processes, and armed with coarse spinules, which like those elsewhere are simple, ending in a slender, stiff corneous black point. On the last segment is a pair of small tubercles and a terminal pair of rust-brown flattened branches of singular spinules. The body is rust-brown, with a livid hue, and the skin is granulated. Abdominal segments 2–7 are pea-green, bordered below with a white lateral line, and enclosing a large dorsal round brown spot bordered with whitish. Between the base of the horns is a small pale spot, and behind are two nearly adjoining yellowish-white patches.

The shape of the stout spines on the tubercles of the full-grown larva is represented by Fig. 3, *a*, which is, however, one of the smaller spines. A singular spine is represented at Fig. 3, *b*; it is clavate, and arises from a papilla situated on the middle of the tubercle near the edge; such clavate setæ as these are very rare, the only other one observed was situated on the middle of another tubercle below the group of papillæ, which extends to the end of the tubercle. A very remarkable spine, and one which we believe is largely concerned in producing the poisonous and irritating effects resulting from contact with the caterpillar of this species, is one situated in scattered groups near the end of the tubercles. A group of three is represented at *c*. They are not firmly embedded in the cuticle, but on the contrary appear to become very easily loosened and detached, and they probably, when brought into contact with the skin of any aggressor, burrow underneath, and are probably in part the cause of the continual itching and annoyance occasioned by this creature. It will be seen by reference to Fig. 3, *c'*, that the body of the spine is spherical with one large elongated conical spine arising from it, the spherical base being beset with a number of minute, somewhat obtuse spinules. This spine reminds one of an old-fashioned caltrop, and a group of them constitutes a formidable armature. The cuticle at the end of the tubercles is granulated, each fine projection being the end of a vase-shaped papilla, all being closely crowded together, as at *c*. The skin of the body between the tubercles is seen to be finely shagreened, an appearance due to the presence of fine clear teeth more or less curved and bent, which arise from a very finely granulated surface, as at *d*. It will thus be seen to what an unusual extent the differentiation of the spines and of the armature of the cuticle itself is carried in this highly specialized form.

Miss Murtfeldt has called my attention to the variation in the larvæ in the length of the tubercles, in the intensity of coloring, and the presence or absence of the cream-colored spots.

RECAPITULATION OF THE MORE SALIENT ONTOGENETIC FEATURES.

A. *Congenital Adaptational Features.*

1. The tubercles on the second and third thoracic and the first, seventh and eighth abdominal segments three times the size of those on abdominal segments 2–6; these tubercles being already differentiated at birth and more markedly so than in Adoneta.
2. Head not capable of being withdrawn into and concealed by the prothoracic segment.
3. The tubercles each bear only three two-forked glandular setæ.
4. The body is more cylindrical than in the later stages, and colorless.

B. *Evolution of Adaptational Features.*

1. In Stage II the form and general colors of the full-fed larva are assumed.
2. The tubercles are now armed with numerous poisonous spinules.

Note.—From what we now know of the congenital, as compared with the later acquired adaptational characters of Cochliopods, it is evident that the latter are acquired at an earlier stage than in most other caterpillars.

LARVA OF EUCLEA QUERCETI (H. S.) (MONITOR PACK.).

The following description is based on over a dozen individuals, found from August 25 to September 8 at Brunswick, Me., on the red or swamp maple and the beech, most abundantly, however, on the former, and always on the under side of the leaves.

Last Stage.—Length, 18 mm.; breadth, 5–6 mm.

The outline of the body seen from above is regularly elliptical, each end being alike. Body with a broad dorsal, flat, plateau-like surface, not so wide as the body, extending from one end to the other, and bearing a row of high conical papilliform tubercles of unequal size. From this plateau-like surface the sides of the body fall away nearly vertically down to a slight ridge bearing long slender papulæ, and situated above the edge of the creeping disk. The body is in general pea-green of two shades, a lighter and darker, with a yellowish hue, assimilating it to the color of the under side of the leaves of its food-plant.

Along the body are two dorsal rows, wide apart, of high, elongated, densely spinose conical tubercles, the spinules black on the distal half. Those of the first pair, situated on the second thoracic segment, are green; those of the second and third pair yellowish; those of the third pair are larger than the second, and the second than the first. All these tubercles are usually reddish on the distal half. On the next five segments is a pair of small rounded tubercles; the first pair, situated on the second abdominal segment, the smallest, and the third pair the largest. The ridge bearing these tubercles is orange, edged with yellow. Between the second and third pair of large anterior tubercles is a rounded madder-brown

spot, and a much larger second one between the first and second pair of small tubercles, which is a deep rust-red or brown-madder squarish or oblong patch ; a similar one lies between the fourth and fifth tubercles, and a fourth smaller, more rounded one between the first and second pairs of the large terminal tubercles. At the end of the body are three pairs of high conical tubercles like those in front. The two anterior pairs are the largest, and those of the posterior pair project out horizontally backwards and are green, the others being yellowish. In the green median dorsal space is a pale median dorsal line, edged distinctly with black, and the sides of the area are edged with black, and dilate near the base of the tubercles, forming black blotches.

The outer side of the subdorsal ridge is edged with black in the same way, and this system of black marks connects with a lateral series of polygonal nearly circular black rings on the vertical sides of the body, and each enclosing two pale, depressed, oval, green areas. There is a lateral series of nine green, long, slender, pointed, spinulate tubercles. Nearly each tubercle on the upper side bears a large pale brown patch like a mass of sand (under a high-power Tolles' triplet I cannot discover the nature of this sand-like mass, which is wanting on the first two and last one). At the end of the body are four conical, high, deep black pencils of fine hairs ; one between the last and penultimate subdorsal tubercle and another in front between the penultimate subdorsal and last lateral tubercle. On the first thoracic segment are a few fine hairs ; it is green and not spotted. The head is green, with the mouth-parts dark. Fig. 4 represents a dorsal tubercle with its spines ; it is perhaps from too old a specimen to show the unicellular poison glands at the base of the spines ; *s.*, a single forked minute spinule ; *ct.*, the cuticle at the base of the tubercle containing clear roundish spaces with a raised edge. There seem to be no caltrops or minute spines in the cuticle of this genus.

Two specimens living on the oak were received from New York through Mr. Simpson. One of them is colored as usual, but the subdorsal madder-brown or reddish squarish spots between the papulæ are dull and rather faint. The other, larger, is quite different in color from normal individuals. The body and dorsal papulæ instead of green are dull orange-reddish, while the reddish patches between the subdorsal papulæ are faint and smaller than usual. The network of what are usually black lines on the sides is rather reddish. The polygonal lateral areas include an upper often dumbbell-shaped pale spot, and a lower double pale spot, the oblique oval spot being supplemented by a pale dot just below and in front. The posterior black conical tuft of hairs is much larger than the lateral ones in front.

It began to spin a thin cocoon September 14.

Two full-grown larvæ, apparently of this species, were found August 1, on the back of a pear tree and received from J. H. Pearson, of Portsmouth, N. H. I will copy my description : Body oblong, flattened beneath, convex above, with a slight subdorsal ridge on each side of the

back, giving a slightly quadrilateral outline to the animal in section. It is pale ultramarine green, the fleshy conical spines or papulæ being deeper green. Of these papulæ there are two subdorsal rows, ten in a row, and otherwise as already described. The spinules of these papulæ are white at the base, with the distal end black. There is a row of lateral spines similarly spinulated and of uniform size. The four pairs of square spots are blackish, those of the anterior pair (on second thoracic segment) being rounded. They are more or less connected with dorsal irregular lines and dots. On the side of each segment is a blackish ring, lined within more or less distinctly with white, and enclosing a roundish hexagonal green spot.

Remarks.—The larvæ of the genus Euclea are wonderfully differentiated and specialized as to their papillæ and surface markings, as well as colors. The object of this or rather the process by which these structures and markings have gradually appeared, can, so far as we can now see, only be explained by supposing that they are warning structures and colors, the gay colors enabling the insect to be easily seen and the forbidding spines preventing their being swallowed by birds after once being detected. On the other hand, the more plain, unarmed larvæ of Heterogenea are instances of protective resemblance, as their lives are saved by their exceedingly sluggish movements and their green colors, assimilated to the hues of the under side of the leaves, in which they rest, for the most part nearly immovable. Yet why should Euclea feed like Heterogenea and allies on the under side of the leaf, and not on the upper, where it would be readily seen?

Parasa chloris H. Sch. (P. fraterna Grote).

The larva, like those of many other Cochliopods, lives on the under side of the leaf of its food-plants. It often, however, begins at the end of a leaf and eats down to the base; it remains on the under side, but the hood bends over so as to be seen from above, but the color, exactly like that of a brown sere part of the leaf, protects it. Several specimens were kindly sent me by Miss Morton, September 4.

Full-grown Larva.—Length, 15 mm. The body is oblong, square; when seen in section it is somewhat trapezoidal, the dorsal surface being flattened, though still somewhat convex, and one-half to two-thirds as wide as the creeping disk or under side of the body. Posteriorly the body ends in a long, slender, fleshy projection or "tail," which is somewhat spinose and slightly forked at the end. Along each side of the dorsal area is a row of short, thick, retractile tubercles which bear peculiar stout spines, which are whitish, tipped with brown at the ends. Fig. 5, *sp.* represents a part of one of these tufts of sharp spines, which are white, becoming dark towards the ends; *ct.*, the spiny cuticle of the body, the spinules being modified cuticular cells; *ct'*, the same seen from above. A few caltrops were to be seen. The third pair from the head is situated nearly on

the second abdominal segment, and is twice as large as the others; those on the eighth abdominal segment are much larger than the other abdominal tubercles (which are minute), and the spines on this pair are whiter than those on the other tubercles. A brown line washed externally with paler bounds the sides of the back. A lateral row of small tubercles bearing spines is situated around the edge, the middle of each tubercle being raised, convex. The spiracles are minute, white, somewhat raised, and situated in a darker round area. Low down between the two rows of tubercles is a row of smooth, kidney-shaped depressed spots. The head is chestnut, the labrum paler. The under side or creeping disk is pale flesh color edged above with a reddish stripe, becoming reddish brown above. The body above is of a rich velvety dark flesh-red brown. Some individuals are much darker than others. The under side of the "tail" is flesh colored, reddish above, and on top of a rich brown.

In this species the spiracles are plainly seen to be arranged, as in *Limacodes scapha*, on the side of the body rather low down, but above the edge of the creeping disk.

In *P. chloris* (*fraterna* Grote) the tail-like end of the body is longer and better developed, and more movable and nutant than in the larva of Packardia. It is slowly raised and lowered while the animal is creeping, with the result that it must be deterrent to ichneumon and other insect enemies. The "tail" is quite hirsute, and is flesh-colored below and at the end, but on the upper side is brown like the body. It varies in length. The "hood" or prothoracic segment is in this species larger and freer from the second thoracic segment than usual.

On one of the larvæ was observed an oval cylindrical ichneumon egg.

Life History of Adoneta spinuloides Herrich-Schaeffer.

Batches of the eggs of this Cochliopod were also very kindly sent me by Miss Emily L. Morton, from New Windsor; they hatched July 18 or 19. The eggs are so flat, scale-like and transparent, that they must be very difficult to detect on the leaf of the food plant. Thus the eggs must be to an unusual extent free from attack of other insects or the gaze of birds, etc.

In Stage II, when feeding, the upper (never the lower) surface, says Mr. Bridgham, is eaten, and all the contents, leaving only the lower skin of the leaf, thus forming little pits on the surface.

Egg.—Very flat, rounded, oval, with very thin edges; varying much in size, some being twice as large as others, varying from 0.7 to 1.4 mm. in length, and nearly as broad as long. The cast shell is thin, membrane-like, not preserving its shape after the exit of the larva, and not showing any markings. Though the eggs themselves vary so much, yet the larvæ within are of nearly the same size. This variation in size is very unusual in insects and may be correlated with some interesting peculiarities of the oviduct.

The Freshly Hatched Larvæ.—Length, 0.8 to 1.2 mm. The body is oval, cylindrical, with both ends nearly alike. The dorsal tubercles are large, prominent, conical; those on the second and third thoracic and first abdominal segments are large, conical, and twice the size of those on the second and third abdominal segments, while those (in one of my specimens) on the fourth segment are as large as those on the first or seventh segment, but in another no larger than those on segments 2, 3, 5 and 6; those on segments 5 and 6 are of the same size as those on segments 2 and 3; those on segment 7 are as large as those on segment 1; those on segment 8 a little smaller than those on segment 7; those on segment 9 of the same size as those in the middle of the body. From each of these tubercles arise three glandular hairs or setæ, which are on the average about a third longer than the tubercles themselves; they are rather stout, tapering slowly from the base to the tip, slightly curved, and divided at the end (as seen under a $\frac{1}{8}$ objective B eyepiece) into three short minute forks.

There is a lateral row of tubercles, one to each segment, beginning with the second thoracic, which are smaller or about half as large as the smallest dorsal ones, and each bearing three setæ. The segments are quite well distinguished. The head is white, about one-half or two-thirds as wide as the body: the latter is at first pearly white, and later with a purplish shade on the back; the skin is very finely granulated, and the spines are blackish towards the tips.

Fig. 6. A camera sketch, from an alcoholic specimen, of the freshly hatched larva; both rows of dorsal tubercles are represented (author del.). Fig. 7. A restoration of the same by Mr. Bridgham, corrected by the author; *f*, front view. Fig. 8, *a*. Third thoracic dorsal tubercle (or first abdominal), bearing three spinules at the end, each terminating in three short, minute, obtuse forks; a^1, ends of four spinules; from each fork or branch a stria passes down to the base of the spinule.

The following description of Stage II has been drawn up from a specimen stated by Mr. Bridgham (to whom I sent the eggs and freshly hatched young) to have molted once, and from which he made his Fig. 215. The drawing was made July 20, the specimen feeding on the scrub oak.

Stage II.—Length, 2.8; width, 1.4 mm. The larva is now at least three times as large as before molting, and it would be difficult (as I have not myself seen the larva alive in this stage) to believe that it could be in Stage II, unless Mr. Bridgham had noted the fact on his sketch that it was drawn "after the first molt." The larva has now assumed nearly the shape and nearly the colors of the fully-grown larva, the tubercles even being a little larger in proportion, and with the spines as numerous and as large as in the last stage. The body is broad and flat, and the head is entirely concealed by the prothoracic hood. The skin is finely granulated. The tubercles are now completely differentiated, and are indeed a little larger in proportion to the body than in the full-grown larva.

Fig. 9 represents a small anterior lateral tubercle after the first molt; the unicellular poison cells not distinctly seen; *a*, a larger lateral tubercle.

Fig. 10, tubercles of last stage; *a*, tubercle with venomous spinules; *b*, space at the base of a tubercle densely covered with caltrop-like spinules; these caltrops are very easily loosened, and can readily work under the skin; *c*, end of a tubercle; *c'*, part of the base of a tubercle, with the granulated cuticle near the base; *d*, two caltrops enlarged; *e*, two venomous spines, with the unicellular gland in the expanded base of the spine; *e'*, a spine of different shape on the same tubercle (author del.).

The second and third thoracic dorsal tubercles are a little slenderer and smaller than the pair on the first abdominal segment. The pair on the fourth abdominal segment are nearly three times larger than those on abdominal segments 2, 3, 5 and 6; those on segments 7 and 8 are of the size of those on abdominal segments 4 and 1.

The ground color is a pale, delicate pea-green; most of the tubercles are green, but the large dorsal tubercles on first, fourth and seventh abdominal segments are now rose reddish; the others only faintly stained with roseate.

It thus appears that all the essential characters of the fully grown larva are assumed in the second stage, and at a period much earlier than in the larvæ of some, if not all, of the other Bombycine families. This acceleration of development of the adaptational characters of the larva seems to occur also in Empretia, and probably in Lithacodia, and is perhaps common to the group. Additional observations are, however, much needed on this interesting point.

The following description is drawn up from ten larvæ kindly sent me by Mr. Fred. B. Simpson from New York. It feeds on japonica, and will, he says, eat the wild rose.

Stage III.—Length, 4 mm. Body with the segments in this genus distinct. It is rather narrow and elongated, nearly three times as long as wide. The back of the body is well rounded, forming a slight approach to that of ordinary caterpillars; the segments convex, and the sutures between them deep and distinct; the dorsal region is narrower than the sides, which flare out somewhat; in transverse section the body is somewhat trapezoidal. The prothoracic segment forms a true hood, which is slightly bilobed on the front edge, and encloses the head when the latter is retracted. The head is moderately large, pale green, and the region of the mouth is darker, pale chestnut.

The three segments behind the first thoracic each bear a pair of large high pear-shaped or high conical bright pale coral-red tubercles, densely spinose and pappose. At the end of the body, on the three last segments, are three similar pairs of coral-red tubercles, those of the last pair being slenderer, more pointed, and projecting out backwards; they are also green, of the same hue as the body, but in the larger specimens they become red. Between these two sets of large red tubercles are five pairs of small green ones, which are one-third as large as the largest red ones; they are not situated quite so near together, and are all of the same size; the third pair are connected by a transverse greenish ridge; from this

ridge to the back of the second segment, or between the first pair of red tubercles is a broad, irregular patch of dull purple, interrupted between the second and third anterior red tubercles by a transverse green line.

On the posterior half of the body is a patch formed of three purplish patches connected together; the third and last of the three portions forming the patch, which ends before reaching the middle pair of the three posterior pairs of tubercles. The sides of the body fall away precipitously, spreading out a little at the base or edge of the creeping ventral disk. On this edge is a series of nine green pappose and spinose papillæ or tubercles, the anterior two or three and the last being very slightly larger than the middle ones. Between the ventro-lateral and subdorsal rows the sides are variegated with upright ridges connecting the lower and upper tubercles. The sides of the body are dark pea-green, and the dorsal region faintly yellowish green, the subdorsal papillæ being yellowish green and the lower ones dark pea-green.

In one slightly larger (4.5 mm. in length) the body above is stained less red and purple than usual, the posterior purplish patch not yet formed, and only represented by purplish points, while the third pair of anterior papillæ and the first and third pair of the posterior set are still green. Also the subdorsal line along the tubercles are whitish yellow.

It thus at this stage varies considerably in coloration and in the distinctness of the hues.

Stage IV.—Length, 7 mm. When in this stage it only differs from the smaller ones in the dorsal purplish patches being more greenish in the middle, and edged distinctly with darker and externally brighter tints. Each segment, also, covered by the purplish patches bears a pair of minute greenish warts, which are much less distinct in the smaller ones; sometimes two of these warts are connected by a greenish line. Also in this stage the last pair of dorsal papillæ are red, and the middle papillæ are stained with bright red on the inside at the base, sometimes the red stain being connected with the red border of the dorsal patch. In this and the next stage the body is somewhat higher over the thoracic region, falling away slightly posteriorly.

Last stage (V), fully grown larvæ.—Length, 12 mm. (The largest and most distinctly marked larvæ selected for description.) The body is of the same shape as before, *i. e.*, when one-half grown. The dorsal plateau is as wide as the body, the sides falling away rapidly from the edge of the plateau; the sides of the plateau are rounded over, not forming ridges. The two great patches on the yellowish plateau are pale purplish madder, darker on the edges, and edged with bright brick-red or Venetian red, while the papulæ are bright cherry or vermilion red. There is a faint, pale medio-dorsal line. The purplish patch begins on the front end of the second thoracic segment and contracts deeply between the second pair of papulæ and again between the third pair, ending suddenly in a mucronate point situated between the sixth pair of papulæ. The second patch begins at a point situated between the sixth and seventh pair of papulæ, contracts

narrowly between the ninth pair, ending just in front of and between the penultimate or tenth pair. The first patch then is composed of three sections or saddle-shaped dilatations, of which the last or third extends a little way down the sides of the plateau, and there are two divisions of the second patch, the first the larger, and extending down the sides of the plateau, but not so far as the third division of the first or anterior patch. Between the first pair of papulæ is a greenish median, transverse spot, and on each side of the first section of the purple patch are two greenish dots like a stunted exclamation mark. These dots appear to be modified surface dorsal piliferous warts, but they bear no hairs. A few fine piliferous tubercles are scattered along the sides of the body. On the middle section of the first or anterior purplish patch are four rounded, impressed, modified, greenish warts, and on the third section there are six of them. On the posterior or second patch the first and larger division bears four such round greenish spots, with a darker centre representing an aborted hair, and on the last division are two similar spots. The last two pairs of spots are connected by a faint line of the same color. The three anterior pairs of papulæ which increase in size to the third pair are all bright, delicate cherry or vermilion red. The three last pairs are of the same color, except the last pair which are green at base; of these three the middle pair (the tenth pair of all) are longest and highest, being twice as long and high as the ninth pair. The fourth and fifth pair are very small and green, while the sixth pair are somewhat larger than the two pairs in front, and the two pairs behind, and tinged with bright reddish. The papulæ are all densely spined, the spines stiff and sharp and blackish at the ends, greenish at the base. On each side, low down, is a row of nine small, spiny papulæ, rather difficult to detect as they are concolorous with the body. Directly below them are the minute, pale, circular spiracles. The papulæ are situated on a ridge, while the spiracles are just below it. Between the papulæ is a pale lemon-yellow streak. The plateau is yellowish green above and on the sides, while the sides are dark pea-green. The skin of the entire body is finely granulated.

This larvæ indicates in some points of its structure its descent and that of the group to which it belongs, from the Attacinæ; these points are the setiferous tubercles, and the distinctness of the segments from one another, the sutures between them being well marked. Adoneta is one of the more generalized forms, while *Limacodes* (*scapha*) and Heterogenea seem to be the most modified, specialized or aberrant forms. Hence Adoneta, etc., are more like the probable ancestors of the group than any other genus.

Several singular microgaster cocoons occurred on some individuals, being white and projecting vertically from the back.

RECAPITULATION OF THE MORE SALIENT ONTOGENETIC FEATURES.

A. *Congenital Adaptational Features.*

1. No tubercles on the prothoracic segment.
2. The dorsal tubercles on the second and third thoracic and first, fourth, seventh and eighth abdominal segments double the size of those on the other segments, the tubercles being already differentiated at birth.
3. The prothoracic segment not yet forming a hood, the head not retracted within it so readily as in the last stages.
4. The tubercles each bear only three three-forked glandular setæ.
5. The segments are more distinct than in the later stages.
6. The body is pearly white, slightly purplish on the back.

B. *Evolution of Adaptational Features.*

1 The body in Stage II assumes nearly the form and colors of the last stage, the tubercles being armed with numerous spines, and some of them tinted with red.

2. In Stage III, the colors and appearance of the full-fed larva are assumed.

LARVA OF PHOBETRON SP.

Received from Miss Soule, of Jamaica Plain, Mass., September 10, on maple. Length, 9 mm. Anterior pair of flaps (of which there are ten pairs, five pairs being larger than the others), spreading out on each side, and as broad at the end as long; those of the four other pairs directed backwards; those of the second pair are one-half as large as the third pair, and are flattened. The fourth pair are very small; the fifth pair slightly larger than the third. The ninth pair are elongate, conical pointed and pale in hue. The tenth pair are minute, directed horizontally backwards and pale yellow. The upper surface of the body is much flattened. The color of the body is pale sandy brown, becoming paler towards the end of the body. Though young it appears to be quite different from the ordinary larva of *P. pithecium*.

The spines and hairs of *Phobetrum pithecium* present some interesting peculiarities. Fig. 11, *a*, represents one of the flaps, which is connected with the body by a very slight attachment at *a t*, situated at the base of the flattened bilobed process, which is naked beneath; the free lobe is fringed with delicate plumose hairs; *b*, represents the end of one of the smaller flaps, clothed with plumose hairs and naked at the end, which bears a very long seta; *b'*, this terminal seta, enlarged still more, with a few thick spinulate setæ near the base.

Fig. 12, two of the plumose hairs from a flap; all of the other processes have similar hairs.

The last genus of the spinose Cochliopodids is Isa (Sisyrosea). Fig. 13 represents the end of one of the lateral tubercles of the first abdominal seg-

ments of *I.* (*Sisyrosea*) *inornata*. Fig. 14, *a*, end of the same still more enlarged containing the supposed venomous glands; *b*, a group of three minute spines at the base of a tubercle, two of them containing the nuclei of the poison-cells; *c*, the basal minute spines at the base of the adjoining tubercle, with the spinulated cuticle (*d*) of the skin of the body between them; *d'*, granulations of the skin, with two minute spines and a fine hair-like seta; *d''*, portion of the cuticle, with minute forked spinules and granulations; *p*, a hollow spine filled with poison.

The Early Stages of Limacodes scapha Harris.

The young live on the under side of the leaf, eating holes out of the middle.

Stage II(?)—Length, 3 mm. On Myrica gale, August 4, from Miss C. E. Soule. The body is oval, much flattened compared with the full-grown larva, being of the shape of a flat-iron, the back being much depressed instead of rising into a conical dorsal ridge as in the final stage. It is square or docked in front and pointed at the end of the body. It is greenish, with a slight amber-yellow tint; but the much raised thick rim or edge of the body is stained brick-red, both the outer and inner edge of the red portion being scalloped, while a reddish bridge is thrown across the depression just in front of the middle.

Stage IV, or that before the last.—Received, August 26, from Miss Soule. Length, 6 mm.; breadth, 3 mm. The body is still much broader and flatter above than in the full-fed worm; the dorsal surface is broader than the ventral, the sides overhanging the creeping disk, while the dorsal surface is broad and depressed, the sides rising or turned up somewhat, while the sides of the body are deeply hollowed in. The body is widest in the middle where there are two large, dark blood-red patches which touch each on the median line of the body. Near the end on each side of the body (on the third or fourth segments from the pointed end of the body) are two pairs of small dark-red spots, connected at the base on the reddish rim of the dorsal field; and on the first pair of spots at the base on the edge of the body is a clear white dot which extends underneath. The edge of the dorsal depressed surface is somewhat stained irregularly with dark blood-red; the red accentuated at intervals by four or five dark-red dots. On each side of the body are two alternating series of round areas, as if stamped into the skin. On each side of the body below are two rows of somewhat similar roundish impressed spots. On each side above is a row of nine chitinous crescent-shaped marks. These spots do not differ in hue from the body. The prothoracic segment or hood is reddish in front and the shoulder of the next segment is stained with red. The head is pale green, dark around the eyes and mouth.

The specimen described below agrees exactly with Harris' figure (Corr.

Pl. iii, Fig. 8). It was found on *Vaccinium corymbosum* at Providence, October 5.

Full-fed Larva.—Length, 15 mm.; greatest height, 7 mm.; breadth of body, 8.5 mm. The body is short and high, quadrangular in transverse section, bulging out a little near the creeping disk. The back slopes rapidly down from the middle to each end, which is acute, ending in a point or process, so that the caterpillar looks like a little rough skiff. The head end is a little truncated, the head not seen from above, while the posterior end is acutely pointed and held somewhat elevated from the surface. Each side of the broad flat back is sharply ridged, and on the outside on the lateral edge of the ridge is a row of eight small, square, brownish spots. The segments are flat and continuous, the sutures obsolete, so that neither above nor on the sides is the body segmented, a characteristic of the larvæ of this genus, which as regards the caterpillar is highly modified or specialized in shape and external structure. In the middle of the back the ridge is slightly swollen and inside are two large diffuse pale-lilac patches; there is a similar pair of patches near the end of the body. The head is brown and of the usual shape. The prothoracic segment or hood has a V-shaped fissure or opening in front; it is lilac above, greenish behind. On each side of the body above is a series of faintly impressed, oblong (vertically situated) impressed areas, each containing a round pale-brown scar. There is a row of scars below the spiracles, and a row of smaller scars along the edge of the bottom of the body. There are seven round pale-brown spiracles visible; the eighth, if present, I have been as yet unable to detect.

The larva of this species differs generically from that of *Lithacodia fasciola* in the very broad dorsal plateau, which is as broad as the body, the sides being perpendicular, and either full or hollow, this being dependent on the motions of the insect. The skin is smoother, less rough and granulated than usual, and there are in general no minute setæ or fine hairs, except a few scattered hairs near the edge of the creeping disk.

The peculiar shining, glistening green color is half way in hue between the color of the upper and under side of the leaf. There is a narrow, threadlike yellow dorsal line from which a fine yellow line passes off at right angles along the suture of three of the segments near the middle of the body. On the third and fourth abdominal segments the lateral ridge, which is well pronounced, is swollen and raised, and stained yellow, but tinged with deep blood red on the top of the dorsal ridge. On the seventh abdominal segment it is flattened and hollow, and there is a subtriangular hollow, pale, yellowish brown, edged with deep red. All the four subdorsal patches resemble the small sere and brown spots on the oak leaf, which are generally yellowish brown and reddish; the imitation in color, as in other Limacodid larvæ, being striking. The edge of the creeping disk is whitish yellow. The body ends in a short, conical, tail-like process, the tip of which is brownish, and on this process the two subdorsal ridges and the two lower yellowish-white lines above the

creeping disk meet. On each side of the dorsal plateau is an alternating row of impressed areas representing flattened and otherwise modified warts, and on the sides are the spiracles, which are round and colored like parchment. Below, alternating with the spiracles, is a row of minute sunken warts, and above, also alternating with the spiracles, is a row of ten oval or dumbbell-shaped pale spots, situated on a large subtriangular impressed field. This field is seen under the microscope to be granulated, while the surface of the body around them is singularly roughened with minute raised, curved or new-moon-shaped granulations.

Larva of Packardia elegans (Packard).

The larvæ of this species frequently occurred on the leaves of the wild cherry at Providence, in rather dense, dark pine woods near the banks of the Seekonk river, during the last two weeks of September. The flexible tongue-like tail, reminding one of that of *Parasa fraterna*, though not perhaps homogenetic with that, is a good generic character, and it may be an incipient deterrent movable organ serving to frighten away ichneumons and tachinas.

Full-grown Larva.—Length, 14 mm.; breadth, 5.5 mm. This larva is allied to that of *Limacodes fasciola*, but differs generically in the long tail-like prolongation at the end of the body. The body is oval, but longer and narrower than usual, and rather high, with a rather narrow but well-marked median plateau-like surface bounded by well-marked, distinctly scalloped ridges, which are stained whitish lemon-yellow. From this plateau the sides of the body fall rapidly off; the surface of each lateral region or declivity is steep and somewhat hollowed, and about twice as wide as the median plateau (in *L. fasciola* the plateau is about as wide as one of the lateral regions). The sutures between the segments are indistinct, not so well marked as in *L. fasciola*. Along the middle of the plateau is a row of pale, whitish-green, rounded spots which extend nearly to the whitish ridge, and are centred by a slightly raised, dark-green spot. It does not form a tubercle or flattened wart. On each side along the middle of the lateral region is a row of ten similar spots, and farther down is a submarginal row of irregular subtriangular lemon-yellow spots, each situated directly below the dark-green centre of the whitish spots above.

The sides of the body, viz., the margin above the creeping disk, are slightly scalloped (the drawing well shows this), the points of the scallops being under a high-power Tolles triplet seen to be well emphasized by a minute piliferous tubercle, a little larger than the other granulations which roughen the skin.

The end of the median plateau is greatly prolonged into a long, tail-like, flexible, fleshy, acutely conical granulated process which is stained cherry-red above, the only red on the body. The end of the creeping disk is provided with fine short hairs.

A moth appeared in the breeding box June 6, and another June 7; it rested on the sides, with its wings depressed and the abdomen raised in the air.

Cocoon.—Rounded oval, of the usual shape; length, 6.5 mm.; shorter diameter, 4.6 mm.

My larva and also some excellent figures, with details, agree with Mr. Dyar's description of the larva of *P. elegans* in *Can. Ent.*, Dec., 1891, 277.

I have two good figures by Mr. Bridgham of the larva of *P. geminata*, which agree well with Dyar's description in *Can. Ent.*, Dec., 1891, p. 277, except that the tail is not slightly tipped with reddish. It was found on the chestnut, September 16, and also on the wild cherry.

The Partial Life History of Lithacodia fasciola (Herr.-Schaeffer).

I am indebted to Miss Emily L. Morton for the opportunity of studying the freshly hatched larva of this species, as about the middle of June she very kindly sent me the eggs from New Windsor, N. Y., which hatched out at Brunswick, Me., July 18 or 19.

Egg.—Irregularly oval; length, 1 mm.; thin, scale-like, and the shell very thin and transparent. As they had dried on the paper on which they were laid, it is impossible to see whether the shell is marked with polygonal areas or not.*

The Freshly Hatched Larva (Fig 15).—Length, 0.8 mm. The body is white, tinged with yellowish; and the head instead of being white, as in Adoneta and Empretia, is somewhat amber colored; the eyes are black and distinct; the body is about four times as long as thick and slightly thicker through the second and third thoracic segments than elsewhere. The thoracic legs are unusually small. There are no tubercles, and the large setæ appear to arise directly from the skin; there are two dorsal and two subdorsal rows, one of each on each side. The grandular setæ (Fig. 16)

* I also received from Miss Morton the eggs of *Phobetron pithecium* and of *Euclea quercti*. Like those described in this paper, they do not present good generic or specific characters, enabling them to be readily identified. I give, however, the following descriptions of them.

Egg of Phobetron pithecium.—The sexes were mated July 3. The eggs are orbicular-oval, flat, scale-like, rather large and of a more definite shape than usual; 2 x 1.5 mm.; somewhat raised in the middle, but with very thin edges, resembling a shallow plate turned bottom-side up. Some fortunately laid on glass showed very plainly that the very thin shell is covered with irregular, usually elongated polygonal markings; here and there one being one-third smaller than most of the others. As usual they are laid in an irregular group, partly overlapping each other.

Miss Morton writes me that the males seek their mates between nine and ten o'clock in the morning, and that she never succeeded in mating a captive female at any other time. She adds that the larva will feed on the chestnut, maple, hazel, oak, wild cherry, and possibly on other trees.

Egg of Euclea quercti.—Quite regular orbicular-oval in outline; thin, scale-like; 2 x 1.5 mm.; the edge is quite definite, and the polygonal areas much as in those of *Phobetron pithecium*.

are large and unusually thick and stout, and are only slightly enlarged at the base; on one side of each seta at the middle is a short, obtuse turn, just beyond which it contracts, and the blunt end is forked; the forks, however, not spreading wide apart. They are all (those of both rows) alike in shape and size and length from the second thoracic to, and including, the ninth abdominal segment, and are about one-third as long as the body is thick.

The segments are distinct, and low down is a lateral series of minute papilliform tubercles, one to each segment, and bearing a single minute short hair.

This larva is very different from those of Empretia and Adoneta, and probably is a fair type of the young or freshly hatched larvæ of Limacodes and Heterogenea.

The young larva was found feeding on the under side of a leaf of the red maple at Brunswick, Me., August 12; it also occurred on the under side of the leaf of the wild cherry in September, at Providence, and I have received it from Miss Caroline G. Soule, of Jamaica Plain, Mass., where it was found September 4, feeding on *Carya tomentosa*.

Stage III (?).—Length, 5.5 mm. The shape of the body is like an inverted skiff, the flat dorsal keel being about half as broad as the whole body, which is oval in outline, the body ending behind in a dull point, which bears two bristles. The larva is pea-green, much darker than the under side of the red maple leaf, and a little lighter than the upper side. The head is pale green, the jaws dull amber. The crenulated ridge along the back is pale straw-yellow. There is a dorsal row of about eight roundish, pale straw-yellow spots. All the tubercles, which are concolorous with the body, bear short, stiff, dark bristles. There is a row of from six to eight faint greenish-yellow rounded spots along the slope of the back, outside of the crenulated yellowish line.

Stage IV (?).—Length, 7 mm. Body oval, flattened, in general rounded; the surface elevated into a dorsal region bounded by two keel-like ridges, the edge of each being serrated, each tooth bearing two obliquely situated short spines which are green tipped with brown, the keel itself being yellowish. Along the middle of the dorsal ridge is a row of ten whitish spots with a greenish centre. Each spot is accompanied in front by two lateral white dots. Outside and below each dorsal ridge is a row of ten large white roundish spots, with dark centres; below this row is a series of white dots, and near the edge of the upper side is a row of obscure white dots. The edge of the body seen from above is scalloped, and on each scallop is a row of laterally projecting minute green spines, the largest one of which is brownish. The body in general is pale green; the head paler, dark on the mouth parts, and the eyes are dark. The surface of the body above is roughly granulated.

Several larvæ living on the under side of the leaf of the wild cherry and chestnut occurred at Providence during the middle and last of September.

Last Stage.—Length, 12 mm.; width, 6–7 mm. The body is regularly

oval in outline, rounded in front, and behind slightly produced. The head is pale pea-green, the mandibles dark, the labrum whitish. The prothoracic segment is as usual without markings. The rest of the body is divided longitudinally into three regions: There is a median, elevated plateau-like region, bounded by a well-marked irregular ridge; from this ridge the body falls off rapidly on each side to the lateral ridge overhanging the creeping disk; the surface of each lateral region may be steeply inclined or somewhat hollowed out, as it depends on the movements of the larva. The segments are defined by well-marked sutures. The skin is very rough, the soft, fleshy rugosities standing well up, and the sides of the body are finely crenulated. The body is pale pea-green, the general tint being like that of the under side of the cherry leaf, but more yellowish. The rough edge of the plateau, *i. e.*, the two parallel ridges bounding it, the surface of the plateau being level, and not hollowed, is lemon-yellow; these two lemon-yellow lines are wavy, and they connect in front on the second thoracic segment; but behind, on the last segment of the body, they do not quite meet. Along the middle of the plateau is a median series of eleven irregular roundish lemon-yellow spots centred by a depressed wart, each situated on a suture. On each segment and each side of the sutural spots, in the middle of each segment, is a pair of lemon-yellow dots. On each of the lateral slopes of the plateau are four rows of lemon-yellow spots, the highest and first being a row of minute transverse spots situated on the suture. Below this row is a series of large transverse oval yellow spots centred by a depressed dark-green point. This row is succeeded nearer the edge by a row of yellowish dots, two on each segment; one, the smaller of the two, situated on each suture. The fourth row is on the margin of the body, and is a broken series of short lines.

There is no red on the body. The end of the body is a rather narrow, obtuse, slightly upcurved portion, being the end of the dorsal plateau. There are no setæ or coarse hairs above, but around the lower edge of the body are sparsely scattered very short fine hairs. The spiracles are situated just above the edge of the creeping disk. *The dorsal setæ of the preceding stage are wanting in the final stage.*

A figure made for me, by Mr. Bridgham, of a larva found feeding by Miss Morton, September 4, on the walnut, is probably next to the last stage, represents bristles, distinct sutures, and the segments as convex, features which are not indicated in the full fed worm.

One example was ichneumoned. It will be noticed that in its last stage this species loses its slight armature of minute bristles; and it apparently has no use for them, since I have been struck with the resemblance in the shape and color of the larva to a simple slight fold in a leaf, so much so that it might readily be mistaken for such a bend in the leaf by a passing bird; and then the very sluggish motion of the creature would further aid in the deception.

RECAPITULATION OF THE MORE SALIENT ONTOGENETIC FEATURES.

A. Congenital Adaptational Features.

1. The larva is hatched without any tubercles.
2. The glandular hairs are of the same size and shape in the dorsal and subdorsal rows; being short, with a tine at the middle, and forked at the truncated end.
3. The body is more cylindrical than in the last stages and not skiff-like, and the segments are distinct and simple.
4. The body is at first colorless.

B. Evolution of Adaptational Features.

1. The body becomes skiff-like when 3.5 mm. in length.
2. The color is pea-green, like that of the leaf it feeds on, with straw-yellowish marks and spots.
3. The skin becomes rough and granulated, and the plateau distinctly marked in Stage III or IV.
4. In the last stage the minute spines disappear.

YOUNG LARVA OF HETEROGENEA SP.

Very near B.'s drawing, August 8, 1888, on the wild cherry. It must be that species, as both want the anterior median reddish dorsal stripe.

My specimen, found on under side of leaf of wild cherry, September, 1890, only differs from Bridgham's figure in wanting the row of small tubercles on each side; these may be developed in the penultimate stage, but my specimen is of the same length (5.5 mm. by 3.5 mm. wide). It is closely allied to if not the same as the *Heterogenea testacea* found on the beech. It differs from those, and an unpublished figure by Emerton, however, in the line from the front edge of the second thoracic segment to the cross being obsolete, and simply represented by a faint, small, transverse discoloration, where two are represented in Bridgham's Fig. A. The red Greek cross is not very well marked, as the arms of the cross are very broad and triangular, and the base does not reach the end of the body. But the colors are as in *H. flexuosa*, the general color purple madder, with a longitudinally oblong pale Venetian-reddish patch containing still paler spots, the whole margined with deep brick-red, and edged on the outside with yellow.

This and other Heterogeneas look just like a reddish patch often to be seen on the under side of some of the cherry leaves and afford remarkable examples of protective coloration.

FULL-GROWN LARVA OF HETEROGENEA SP.

Occurred on the under side of leaf of oak at Brunswick, Me., September 6 (Bridgham's MS. Fig. 273).

Length, 9 mm.; breadth, 5 mm. The body is broad, oval, somewhat flattened, with two narrow dorsal ridges, which are a little wider apart on the second thoracic segment, and in the middle of the body. The ridges are irregular, wavy, crenulated and lemon yellow, uniting on the last abdominal segment. From the ridges the sides of the body fall away at a low angle forming a gentle declivity, on which are two alternating rows of depressed lemon-yellow oval areas, bearing a minute depressed pit, a sunken piliferous wart, without the seta. A series of scattered very minute slender short hairs can be seen with a Tolles high-power triplet. On the second thoracic segment the ridge and space between is filled with bright red; in the middle is a sunken pit, containing a small pale wart, but not bearing a bristle. A larger subtrapezoidal red spot in the middle of the body is edged with lemon-yellow, but the tubercle in its centre is stained with reddish. Besides the median warts there are nine other green ones along the middle of the dorsal ridge, one to each segment. The segments are distinct enough to be counted. The general color is pea-green, slightly more yellowish than the under side of the oak leaf. The prothoracic segment is unspotted. The head is pale greenish, the mouth parts pale chitinous. The skin of the body is in general rough and corrugated, subgranulated.

FULL-GROWN LARVA OF HETEROGENEA (TORTRICIDIA) TESTACEA PACK.

The larva (a ♂) in shape much like that of the European *Heterogenea asella*, occurred September 8, on the under side of a beech leaf, at Brunswick, Me. It spun its cocoon on September 10, and the moth appeared on May 27 following.

Larva.—Length, 11 x 6 mm. Skiff-shaped, being oval in outline, with the front full and rounded, but also rather blunt at the end, not pointed. Dorsal surface full and convex, neither angulated nor keeled, as it is in *Limacodes scapha*. On the anterior and also the posterior third of the body are two nearly parallel, slight, irregular ridges, which are not so distinct in the middle of the back, and which send out a red line, and spreading out in the middle of the body form a broad red loop nearly reaching the side of the body. The ridge at each end is a rich, bright Venetian red, edged externally with yellow. The space between these ridges is filled in with pale Indian-red almost exactly of the color of the reddish-brown withered spots on the leaves of the same tree, as I especially noticed; the mark is, in other words, a large faded reddish blotch like a Greek cross, extending from end to end of the body, the lateral triangular expansion or arms of the cross nearly reaching the sides. There is a median dorsal row of impressed rounded warts, which do not bear bristles, for there are no fine hairs or setæ on the body. From the dorsal ridges the sides of the body fall gradually away to near the edge of the body, where there is a much thickened rounded bead or ridge overhanging the edge of the creeping disk. On the sloping side are two rows

of impressed areas, the subdorsal consisting of a large transversely situated, acutely oval depression, one on each segment on each side of the body, and those of the second lower series are about one-third as large as the subdorsal ones. Low down on the side of the creeping disk is a row of small round impressed areas. In front the red top of the cross widens a good deal, ending in the front edge of the second thoracic segment; while at the end of the body, what corresponds to the foot of the cross is narrowed to an obtuse point. The skin is corrugated and somewhat granulated, and the body in general is pale green, being concolorous with the under side of the beech leaf.

On each side are two rows of depressed areas, the upper row of ten are oval, the smaller end pointing up, and the middle five on the purple madder spot or arm of the cross are longer and narrower oval than those in front or behind. The row of ten below are round sunken areas; still below, but quite near the second row, and alternating with those of the second row, is a series of ten minute button-like round depressed marks; also most distinct on the purple madder of the arms of the cross. The prothoracic segment and head are dull pea-green; the head a little paler and chitinous around the mouth-parts. The skin is rough, finely granulated and punctured, but bearing no setæ, except some sparse, minute, slender ones around the edge of the creeping disk.

The spiracles are situated just above the edge of the creeping disk.

The "frass" or castings are irregular, short, barrel-shaped pellets.

Two larvæ were found on the wild cherry in which the anterior median line is broken up into three reddish spots. In one specimen the reddish cross is much paler than usual.

(An unpublished figure by Emerton of a larva from Kittery, Me., August 27, 1867, is the same species.)

One found at Providence, on the oak, September 17, and figured by Bridgham (285), is like the one above described, but the head of the red cross is slenderer, and the whole cross is broader and larger in proportion to the body; the two arms of the cross are wider. In the middle of the body on the plateau is a square, pale, sere brown and green spot. Another specimen (Bridgham's Fig. 284) occurred September 16, on the wi'chhazel.

The larva of this species feeds on the under side of the leaf as do the larvæ of *Packardia elegans* and *Lithacodia fasciola*. They all eat brown patches here and there, or small holes in the leaf.

The Larva of Heterogenea flexuosa Grote?

The following description was drawn up from a larva received from Mr. H. G. Dyar, of Rhinebeck, N. Y. Mr. Dyar writes: "I am not sure of the determination of *L. flexuosa*, as I never raised but one."

Length, 8 mm.; breadth, 4.5 mm. Body oval, thickest a little behind the middle of the body. The median dorsal plateau is not well marked,

the two ridges bounding it not being very distinct, but nearly obsolete. From the plateau, which is rather broad, the sides fall off at a moderate slope to the edge of the body. The width of the plateau is about the same as the body on either side. The body is pea-green, tinged with yellow in front. The second thoracic segment or front of the body as seen from above is mostly bright brick-red (Rubens' madder red), becoming darker in the middle; the red extends on each side to the front edge of the segment behind, and extends back to the great central reddish patch; it encloses a rather large, green, sunken, rounded wart, and two smaller, less distinct ones behind. There are no hairs or bristles on the body. The great central patch consists of a large central orange or pale Venetian-red spot extending along the plateau and including four median oval, round, sunken warts, with a flattened button-like wartlet in the centre, and four oval warts which are depressed and acute at the smaller end, each pair alternating with the median areas. This brighter red plateau spot is surrounded by a large pale purple madder patch forming a spot of the shape of an irregular Greek cross, which sends a broad arm to each side of the body, reaching to and including the side of the lateral ridge just above the creeping disk. The same patch sends a broad, triangular posterior arm along the plateau, spreading out each side of it to the end of the body and ending in a sharp point, which is at the foot of the cross. The entire cruciform patch is edged with carmine red, and outside of that, especially behind, with lemon-yellow.

Larva of Heterogenea (Tortricidia?).

Occurred on Vaccinium. Length, 9 mm.; width, 4.5 mm. In outline seen dorsally to be oval-elliptical and produced behind into an upturned point, which is obtuse at the end, with two setiferous tubercles. The surface of the body is round and irregular, the back is raised into two great, longitudinal, irregular, fleshy ridges, with large, fleshy tubercles of the same color, bearing short, stiff, dark setæ which are pale at base and black at tip. Each of these ridges is irregularly stained with pale yellow. There are also two similar lateral ridges, the lowermost forming the edge of the creeping disk. They are broken up into a series of conical, setiferous, fleshy tubercles, but are not stained with yellow. The body is pale pea-green, the surface of the skin finely granulated. There are no reddish marks.

Explanation of the Plates.

Plate I.

Fig. 1. Freshly hatched larva of *Empretia stimulea*. (Much enlarged.)
2. Tubercle of the same, bearing three forked glandular hairs.

Fig. 3. Spines, caltrops and cuticle of a fully fed larva of the same species. (For further explanations of this and other figures, see text.)

4. *Euclea querceti*, a dorsal tubercle with its spines.

5. *Parasa chloris*, spines and spiny cuticle of fully grown larva.

Plate II.

Fig. 6. Freshly hatched larva of *Adoneta spinuloides*.

7. The same, drawn by J. Bridgham.

8. Forked grandular hairs of the same, Stage I.

9. A lateral anterior tubercle of the same species, Stage II.

10. Tubercles and poison cells of the same species, last stage, with caltrops and cuticle.

12. Plumose hairs of *Phobetron pithecium* taken from one of the lateral flaps.

15. *Lithacodia fasciola*, freshly hatched larva.

16. *Lithacodia fasciola*, glandular hairs, Stage I.

Plate III.

Fig. 11. *Phobetron pithecium*, a lateral flap; and seta at end of flap; last stage.

Plate IV.

Fig. 13. *Isa inornata*, a lateral abdominal tubercle.

14. End of the same still more enlarged, containing the poison, *p*.

(All the figures, except 7, drawn by the author with the camera.)

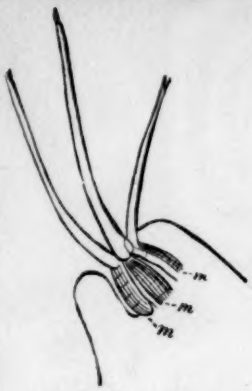


Fig. 2.

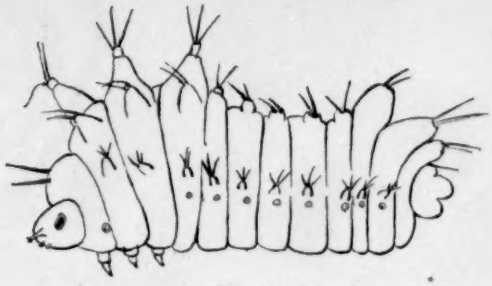


Fig. 1.

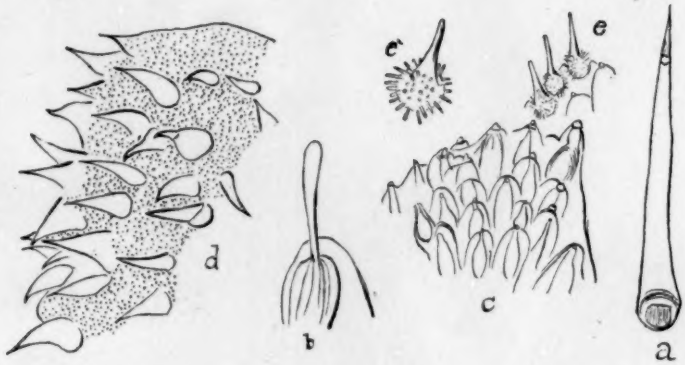


Fig. 3.

Packard del.

Fig. 4.

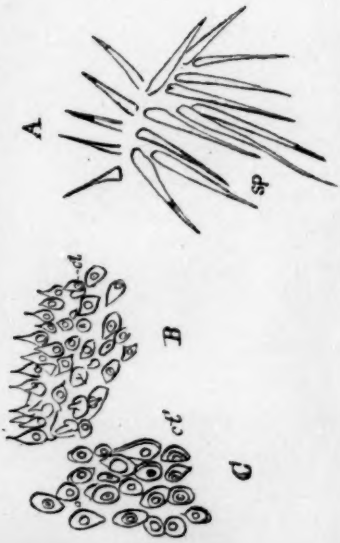


Fig. 5.

Larvæ of Cochliopodes and their armature.

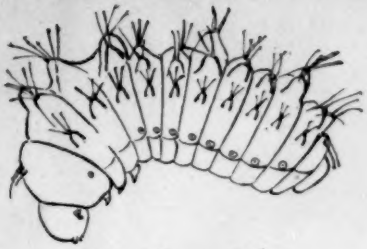


Fig. 6.

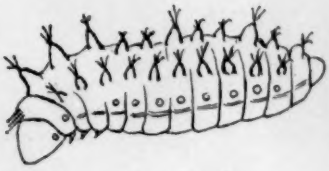


Fig. 7.

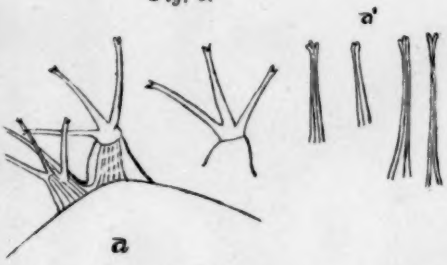


Fig. 8.

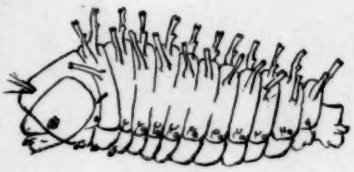


Fig. 15.

Fig. 9.

Fig. 16.

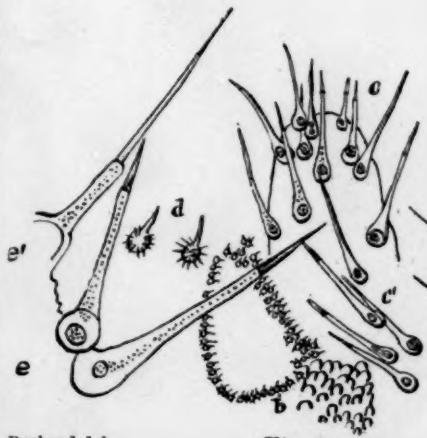
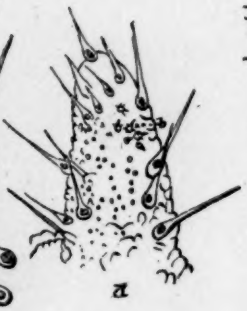


Fig. 10.



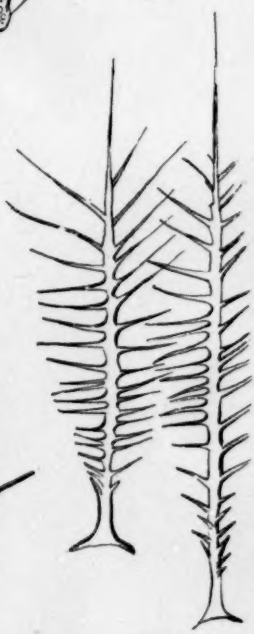


Fig. 12.

Packard del.

Larvæ of Cochliopodes and their armature.

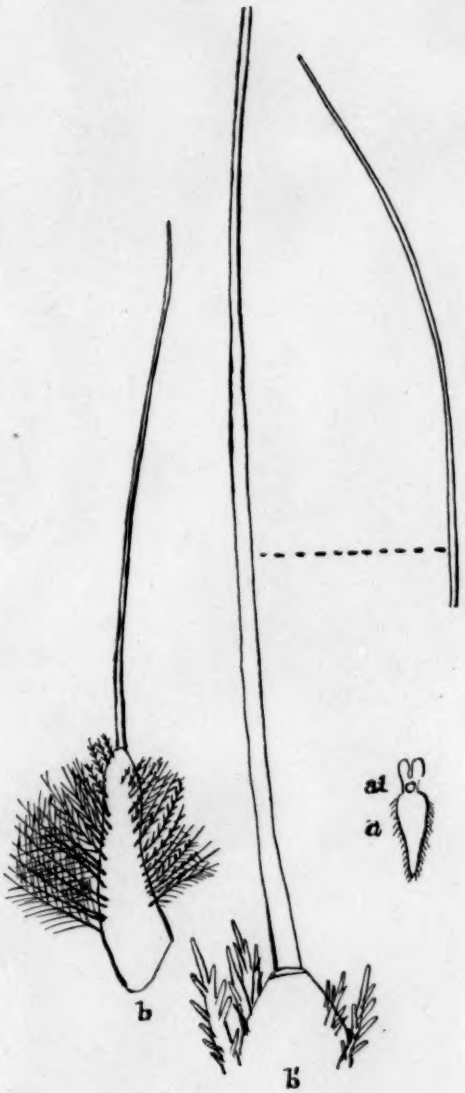


Fig. 11.

Packard del.

Larvæ of Cochliopodes and their armature.

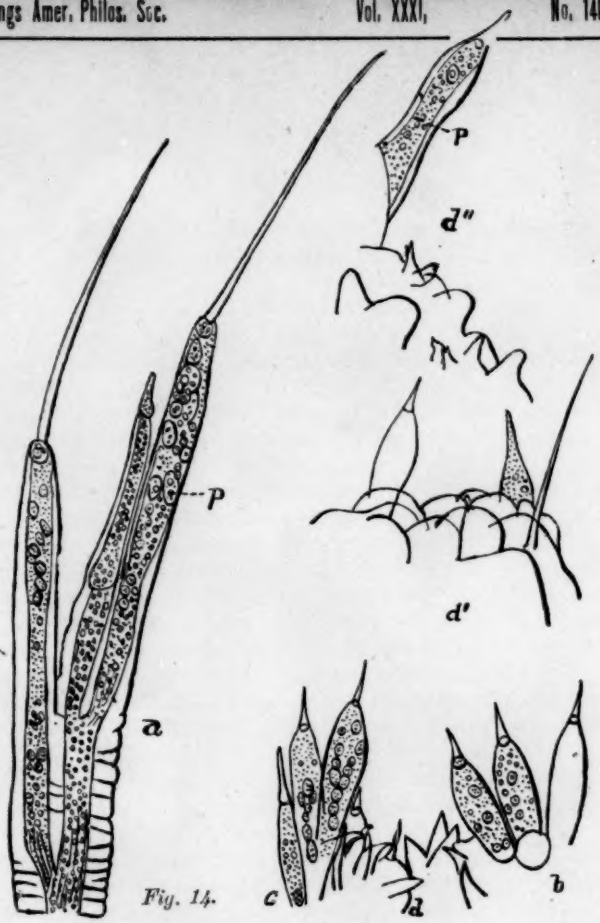


Fig. 14.

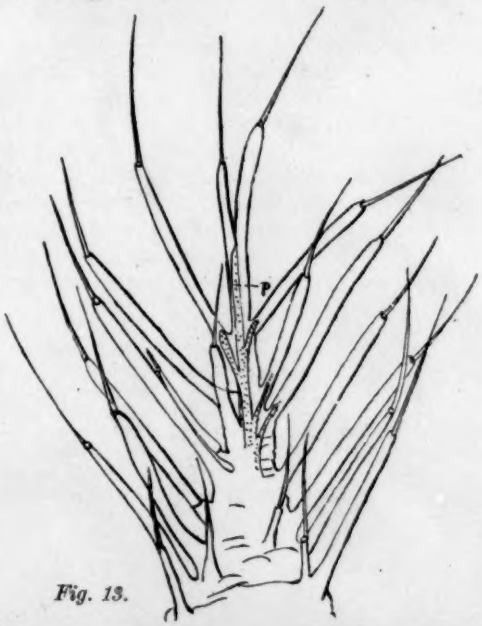


Fig. 13.

Packard del.

Larvæ of Cochliopodes and their armature.

The Thyrsos of Dionysos and the Palm Inflorescence of the Winged Figures of Assyrian Monuments.

By Dr. Charles S. Dolley.

(*Read before the American Philosophical Society, February 17, 1893.*)

The generally accepted interpretation of the conical structure terminating the thyrsos, carried by Dionysos and his Thyasos, is that it represents the pine or fir cone.

Notwithstanding the number of authors, both ancient and modern, acquiescing in this interpretation, it seems to the writer entirely inconsistent with the present state of knowledge regarding the origin and spread of the Dionysos cult, and the significance of the Dionysiac mysteries. Brunck,[1] Welcker,[2] Smith[3] and others regard the fir tree and its cones (*κωνοφόρος*, *κῶνος*, Theoph.) as being dedicated to Dionysos in consequence of the use of the cones and of the turpentine and resin obtained from the fir trees (*πεύκη*, Theoph.) in making wines.

Buchholtz[4] comes to the same decision regarding the pine (*πίτυς*), basing his opinion upon the same line of reasoning, and the authority of Plutarch.[5]

The custom of flavoring wines with resinous substances was not confined to the ancients, but is prevalent in Italy and Greece to-day,[6] and a careful review of the list of wines mentioned by Homer and earlier Greek writers, and the statements of Theophrastus, Dioscorides and Pliny regarding turpentines and resins, goes to show that there is no sufficient foundation for the above conclusion. It will furthermore be shown in the following examination of the subject, that such associations as exist between the Dionysos cult and the pine or fir tree are based upon considerations having nothing to do with wine.

The epithet or surname Bacchus (*βάκχος*, *Διόνυσος βάκχειος*) does not occur until after the time of Herodotus (484 B. C.). According to Lenormant,[7] the "name is derived from the joyous cries with which the young god was accompanied, and it at first denoted the procession itself, or the song which was sung in it, before it was applied to the god." It seems possible that the term primarily referred to the thyrsos or rod carried by the god and each of his followers.

The drunken, riotous characteristics of the mysteries were probably

[1] *Griech. Anal.*, 1, 42.

[2] *Griech. Götterlch.*, 1, 424.

[3] *Dict. Greek and Roman Antiq.*, Article "Thyrsos."

[4] *Hom. Realien.*, 1, 2, p. 266.

[5] *Symp. quæst.*, 3.

[6] The modern Greek name *χρασὶ ῥητσινάτο* is applied to wines flavored with the resin of the Aleppo pine, *Pinus halepensis*, Mill. See Heldreich, *Die Nutzpflanzen Griechenlands*, pp. 14 and 41.

[7] "Eleusinian Mysteries," by Francoise Lenormant, *Contemp. Rev.*, Vol. xxxviii, p. 856

added to the original cult by the Phrygians and Phœnicians ;[8] moreover, Euripides lays the scene of the Bacchanals in Thebes, a Phœnician settlement. Creuzer[9] derives the word from the Phœnician and the Hebrew ככה (*bachah*). The religious ideas of the Phrygians were impressed directly upon the Greeks, but originally derived from the Syro-Phœnicians. With the Greeks the Dionysos cult had taken form and symbol long before the taste for artificially flavored wines arose, and, in fact, before wine became a common drink. The symbols came along with the cult, but having to a certain extent lost their original significance, so plain to the dwellers of Asia, the Greeks endeavored to account for them, as numerous writers have since, by giving them new and varied meanings. Thus the tall, slender fennel stalk, with a cluster of male date flowers fastened at the tip, as used by the Assyrian priests in the process of palmification, became the symbol of fructification in its widest sense. Carried in processions in honor of the deity of fruitfulness, it gave its name first to its bearers, and then to the god himself, and finally, when, far from its original home, the cult had lost its primitive purity, and its celebration had degenerated into the orgies of a frantic mob, the name (*βάχχος = rod*) came to signify the frenzy of intoxication.

But to revert to our objections to the plea that the pine cone was sacred to Dionysos because employed in flavoring wines, we find that the resinous taste was not by any means imparted to wines by means of the products of cone-bearing trees alone ; on the contrary, Theophrastus[10] in his chapter on resins[11] refers to the relative values of the different varieties of gum resins, and places, far in advance of all others in public esteem, that produced by the terebinth (the turpentine tree of the Bible, *Pistachia terebinthus* L., or *τέρμινθος* of Theoph.), a tree common in the Greek islands and in Palestine, Egypt and North Africa, and belonging to an order of plants totally distinct from the conifers. The modern product of this tree is known in commerce as Chian turpentine, and comes mostly from the island of Chios, which excelled in the quality and quantity of this product in the time of Dioscorides and ancient Rome. The specific name had been changed, at the time of Dioscorides, from *τέρμινθος* to *τερέβινθος*, and that writer refers to it as *ἔλαιον μάστιχον*. According to Pliny[12] the terebinth was used in wine making, by boiling the new wood with the must. The same writer[13] quotes Plautus as stating that the wines most highly esteemed among the ancients were those perfumed with myrrh, a product of two distinct plants, neither of them conifers. On the other hand, while the pitchy flavor was, without doubt, frequently produced by the resin of cone-bearing trees, such wines were not specially popular, nor were they considered wholesome, judging from the follow-

[8] Gerhard., *Mythol.*, I, 495.
[9] *Symbolik d. Mythol.*, III, 125.
[10] IX, 2, 7 and 3, 1.
[11] Cf. Koch, *Bäume und Sträucher des alten Griechenlands*, pp. 26 and 31.
[12] *Nat. Hist.*, XIV, 19.
[13] XIV, 15.

ing statement: "The most wholesome wine of all is that to which no ingredient has been added when in a state of must; indeed, it is still better if the vessels even in which it is kept have never been pitched." . . . . "New wines seasoned with resin are good for no one, being productive of vertigo and headache; hence it is that the name of *crapula* has been given equally to new resined wines and to the surfeit and headache which they produce."[14] In the making of "crapula," Στροβίλίτης οἶνος,[15] pine cones (Στρόβιλος) were certainly employed, being steeped in the must, but it seems hardly probable that a custom not altogether prevalent, and producing a product regarded as unwholesome, should have given rise to the most common and characteristic Dionysiac symbol. Moreover, the resinous flavor was frequently produced in the wines by smoking either the grapes or the wine itself in wine lofts—*apothecas*[16]—in the smithies or the chimneys. The Libanian grape produced a wine having a natural odor of frankincense, and which was preferred in making libations to the gods.[17] Rhætian and Allobrogian grapes had naturally a strong flavor of pitch.[18] At the time of Homer, Dionysos was unknown as the god of wine. According to Herodotus[19] not only was the name of Dionysos, but also the various extraordinary rites accompanying his worship, introduced into Greece by Melampus.

Euripides in many places clearly points to a well-understood Eastern origin of the cult, thus:

"Dion. And I have left the golden Lydian shores,
The Phrygian and the Persian sun-seared plains,
And Bactria's walls; the Medes' wild wintry land
Have passed, and Araby the Blest; and all
Of Asia, that along the salt sea coast
Lifts up her high-towered cities, where the Greeks,
With the Barbarians mingled, dwell in peace.
And everywhere my sacred choirs, mine Orgies
Have founded, by mankind confessed a God
Now first in an Hellenic town I stand."

Or again:

"But ye, who Tmolus, Lydia's strength, have left
My Thyasus of women, whom I have led
From lands barbarian, mine associates here,
And fellow-pilgrims; lift ye up your drums,
Familiar in your native Phrygian cities."

Melampus is supposed to have received his knowledge of the cult from Cadmus, who, with the Phœnicians accompanying him to Bœotia, brought these rites either directly from Egypt or from Tyre.

General tradition points to the introduction of the Dionysiac mysteries

[14] Pliny, xxiii, c. 24.
[15] Dios., 5, 44.
[16] Pliny, xiv, 16.
[17] *Ibid.*, xiv, 22.
[18] *Ibid.*, xiv, 3.
[19] ii, 49.

into Greece from India—compare the Assyrian title of the sun god *Diannisu*, "judge of men" (Fox Talbot),—by way of Parthia and Thrace, and this seems to be confirmed by Strabo's[20] assertion that all Greek music was of Thracian origin. The choragic monuments of Athens show the intimate relation of music and the worship of Dionysos. The worshipers of the god in Thrace were in fact known as Orpheans, and with them the thyrsos-tip represented no longer a date-palm inflorescence, and not yet a pine cone, but the heart of Dionysos-Zagreus, torn from the young god by the Titans.[21]

As to the thyrsos, its primitive use in the Dionysiac processions was that of a wand or stave, to be tossed by the hands or feet of the dancers; thus:

> "PENTHEUS. The Thyrsus—in my right hand shall I hold it?
> Or thus, am I more like a Bacchanal?
> DIONYSOS. In thy right hand, and with thy right foot raise it."

For this purpose the light stalks of the giant fennel, the *Νάρθηξ* of the ancients, *Ferula communis* L.,[22] a native of the regions about the Mediterranean, were admirably adapted, their structure being of so fragile a character as to obviate any danger being done by such blows as might be given by the rioters, as has been pointed out by Fée.[23] The same plant, and probably for similar reasons, was associated with Silenus, the companion of Dionysos:

> "Venit et agresti capitis Silvanus honore
> Florentis *ferulas* et grandia lilia quassans."
> *Virg. Ecl.*, x, 25.
>
> (Sylvanus also came with the rustic honor of his head
> Shaking the flowering fennels and the large lilies.)

The custom of twining garlands about the thyrsos was but an imitation of nature. Pierre Loti, in his charming descriptions of Morocco, refers more than once to these gigantic fennels, spreading over the country in every direction, a "forest of yellow verdure," . . . . "the flower-clad stalks of which are like yellow trees, and which are *festooned* by the great white blossoms of the bind weed, such as we see in our gardens." This very bind weed, *Convolvulus sæpium* L.,[24] was used in decorating the bacchantes and their staves, together with the ivy, there being a great resemblance between the leaves of the two plants.

From the above and many similar considerations, we are led to believe that the early worship of Dionysos was free from the frenzied debauchery of later days, and that the god's peculiar relations to wine were the result

[20] x, pp. 469–471.
[21] Cf. De Gubernatis, *Mythologie des Plantes*, ii, p. 290.
[22] Dierbach, *Flora Mythologica*, p. 67; Heldreich, *l. c.*, p. 40.
[23] Fée, *Flore de Virgile*, p. lvi.
[24] J. Murr, *Die Pflanzenwelt in der Griechischen Mythologie*, p. 233; Euripides, *Bacchinals*, 702.

of corrupting influences affecting the cult during its westward spread. According to Pindar,[25] Plutarch[26] and Appolonius,[27] instead of the wild and wanton Thyasos depicted by Euripides, who, "at the appointed hour, shoot their wild thyrsi in the bacchic dance," Dionysos was in the earliest times accompanied by the Graces, and near the grove of Pelops, at Olympia,[28] shared an altar in common with them. In fact, while tracing back the cult through Parthia and the East, we pass from the home of the grape to lands where wine was the product of the date, and if the cone-like structure tipping the thyrsos finally came to symbolize the bacchic and wine-loving attributes of Dionysos, it was through a substitution of the grape for the date, a combining of the Eastern symbol of fertilization with the garlanded rod of the dancers, and a failure to comprehend the significance of the cone-like thyrsos tip, which in reality originally represented the date inflorescence found in the hands of gods, priests and winged figures on Eastern monuments.[29]

That the Greeks and Latins were for a long time at a loss properly to account for this cone-like tip, being in no position to understand the import which the male date-palm inflorescence and the process of palmification held in lands further to the East, where dates formed the staple article of food, is shown by the substitution of various plants for the cone. The shaping of ivy and vine leaves into conical form, or "entwining with leafy greens the blades of javelins,"[30] shows as little comprehension of the real significance of the thyrsos on the part of the Greeks, as well as the corruption into which the cult had fallen, as does the story of the death of Orpheus the poet-guardian of the bacchic mysteries, at the hands of the frantic throng of Ciconian matrons beside Hebrus' stream.

Without going into the question of the identity of Dionysos and Osiris,[31] or of Dionysos and the Priapus of Lampsacus, there can be no question that the basis of Dionysos worship was the belief in his universal quickening or procreative powers. The similarity of Osiris and Dionysos worship, the association of Dionysos with Demeter and the various symbols of his worship—phallus, serpent, bull, goat, fauns, satyrs, and the seasons of the year devoted to his festivals—all go to confirm the conclusion that the original cult rested entirely upon the personification or deification of the active propagative or creative powers of living nature. It is a significant fact that the Greeks held and still hold that pulverized date seeds have the property of provoking and facilitating parturition.[32]

[25] *Ol.*, xiii, 5–10, 20.

[26] *Quaest.*, Gr., 36.

[27] *Rhod.*, iv, 424.

[28] *Pausanius*, v, xiv, or Taylor's transl., ii, p. 42.

[29] Cf. Edw. B. Tylor, "The Winged Figures of the Assyrian and Other Ancient Monuments," *Proc. Soc. of Biblical Archæology*, Vol. xii, pp. 383–393.

[30] Ovid, *Metam.*, xi, 27, 28; iii, 667.

[31] Cf. King, *The Gnostics and Their Remains*, 2d ed., 1887, pp. 321–323.

[32] *Grisard et Vanden Berghe, Les Palmiers Utile et leures Allies*, Paris, 1889, p. 146.

In early art we find Dionysos frequently represented in association with the palm tree, or its conventionalization, the palmette.[33]

At a later date, we find associated with the god some thirty odd plants, chief among which are the ivy, the silver-leaved poplar, the grapevine, the myrtle, the fig, the bind weed, etc.

Most of these plants, from the damp, shady character of their habitat, or from their productiveness, were held to be symbolic of the dews or moisture so essential to vegetation.

The aphrodisiac and stimulating qualities of wine naturally led to the placing of the vine among the plants symbolic of the quickening, rejuvenating god. Certain plants evidently refer to the soft, florid skin of the god, and to his general effeminate character.

In all the symbols of Dionysos, we find some obvious motive, except in the case of the fir or pine cone, and we cannot admit any force to the argument of Murr, Bœtticher and others, that the association of the pine with the god may be traced to the Corinthian myth of Pentheus, hiding among the branches of a pine tree from the frenzy of his mother Agave and the furious bacchantes:

> "PEN. Well said: against a woman who would fight?
> I'll hide myself upon some shady pine."[34]

It is curious that Milman, in translating this passage, calls the tree an ash, by what authority I cannot even surmise. In Paley's text the word ἐλάτης is used to indicate the tree, *i. e.*, the silver fir, *Pinus picea* (distinguished by Theophr. as ἐλ. ἄρρην and ἐλ. θήλεια, probably *Pinus abies* and *P. picea*,[35] but oddly enough this word was also used to refer to the young bud of the palm.

Neither can any inference regarding the origin of the thyrsos tip be drawn from the use of pine wood in the making of statues of the god, since Pausanias[36] describes the head found by the Methymnean fishermen, and declared by the Pythian deity to be a representation of Bacchus, as being made of olive wood. No one would, however, care to argue that the olive should, on this account, be considered a Dionysiac symbol. It is much more probable that the association of the pine with Bacchus was based upon the gathering of the throngs upon the pine-clad hills:

> "DION. There's not a woman of old Cadmus' race,
> But I have maddened from her quiet house;
> Unseemly mingled with the sons of Thebes,
> On the roofless rocks, 'neath the pale pines they sit."

[33] I do not agree with Goodyear in the belief that the palmette is derived from the lotus or any other motive than the palm.

[34] Cf. translation, by James Thorold Rogers, of Euripides' *Bacchanals*.

[35] See Daubeny, *Trees of Ancients*, p. 26.

[36] x, c. 19; Taylor's translation, Vol. iii, p. 152.

Or the customary use of pine torches in the Orgies :

> "Chor. The while the frantic Bacchanal,
> The beaconing pine torch on her wand,
> Whirls around with rapid hand."

Or :

> "Tir. As him shall we behold on Delphi's crags,
> Leaping, with his pine torches lighting up
> The rifts of the twin-headed rock ; and shouting
> And shaking all around his Bacchic wand
> Great through all Hellas."

It was, as Dyer points out,[37] not at all uncommon for the priests of the temples "to combine and maintain with equal hand the various cults of various divinities centred there." There was an early brotherhood of this kind established between Dionysos and Apollo, accompanied at times by an exchange of attributes and symbols, as is done by Æschylus when he sings :

> " Apollo, ivy-god and prophet bacchanal." [38]

Or by the words of Euripides :[39]

> " Lord Bacchus, lover of the laurel tree."

We see the blending of the Apollo and Dionysos cult in the appellations *Dionysos melpomenos*[40] and *Apollo Dionysodotos*. In the frequent transfer of insignia of one god to another, the tripod, originally a bacchic symbol, is permanently turned over to Apollo—*χορηγικοὶ τρίποδες ἐκ Διονυσου*, "dedicated to a god by victorious choruses" [41]—although given as a prize at the festivals of Dionysos in the Attic dithyrambic contests[42] and we find it associated with the vine on the shields of warriors, pictured on certain Greek vases.[43] Again Bacchus was worshiped in the shape of Apollo's bull,[44] as at Elis, *ἄξιε ταῦρε*,[45] or in turn lends his crown of ivy to Poseidon.[46]

Apollo as the god of light, Dionysos as the earth god, combine the attributes of light, heat and moisture, the essentials of all organic life. We can, therefore, understand the close relation of their cults, and explain the presence of a date palm tree alongside the oracle of Apollo.

[37] *Studies of the Gods in Greece*, Macmillan, 1891, pp. 29–36.
[38] *Æschylus Tr.*, 394 ; cf. Macrobius, *Saturn*, 18, 6.
[39] Macrobius, *Saturn*, 18, 6.
[40] Pausanius, i, 2, 3, 4 ; xxxi, 3.
[41] Gerhard, *Auserlesene Griechische Vasenbilder*, etc., i, p. 115 ; cf. Muller, *Der tripode delphico*, p. ii ; *Amalthea*, i, s. 127.
[42] Athen, ii, 37, *νἱκητήριον ἐν Διονυσος*, "the festival of victory."
[43] Gerhard, *l. c.*, Tab. xxxi.
[44] Gerhard, *l. c.*, p. 114, Tab. xxxii.
[45] Plut. *Quæs. Gr.*, 36 ; *Historia Numorum*, pp. 33, 66 ; Creuzer *Symbol*, iii, 87–95.
[46] Gerhard, Tab. x ; Paus., vii, 20, 1 ; iii, 24, 6.

The date palm, like the Dionysiac cult, was unknown to the early Greeks, to which Victor Hehn[47] refers as follows: "The *Iliad* never mentions the palm, which was as foreign on the Anatolian coast as in Greece proper; but in the oldest and most beautiful part of the *Odyssey*, the palm at Delos is described in words that express the admiration excited in the Greeks of the Epic period by a figure so novel and strange in the vegetable world. Ulysses has approached Nausicaa on the strand, and flatteringly beseeches her assistance:

> "'Never, I never viewed till this blest hour
> Such finished grace! I gaze and I adore!
> Thus seems the palm with stately honors crowned
> By Phœbus' altars; thus onlooks the ground;
> The pride of Delos. (By the Delian coast
> I voyaged, leader of a warrior host;
> But ah, how changed; from thence my sorrow flows;
> Oh fatal voyage, sum of all my woes.)
> Raptured I stood, for earth ne'er knew to bear
> A plant so stately, or a nymph so fair.'

The far-traveled Ulysses had nowhere else on earth seen a tree like this, to the slender form of which he compares the figure of the royal maiden, just as Solomon does in his song, 'This thy stature is like to a palm tree,' and as the daughters of kings in the Old Testament bear the name of *Tamar*, the date palm. The palm tree, the pride of Delos, is also mentioned in Homer's hymn to the Delian Apollo; at its foot, clasping its stem with her arms, Leto was said to have given birth to her glorious son. The fame of the Delian palm grew with the increasing fame of the island, both as a resort of Apollo's pilgrims and as an emporium, especially as its fame had been echoed in the *Odyssey*. In later times, palm leaves were used at the four great festivals as symbols of victory. They were sometimes worn as wreaths on the head, sometimes carried in the hand. . . . . In the middle of the seventh century B. C., the tyrant Kypselus, ruler of semi-Oriental Corinth, dedicated a bronze palm tree to the temple at Delphi, where there were no living palms. . . . . The Athenians also erected a bronze palm tree at Delphi in honor of their double victory on the Eurymedon, and another at Delos through Nikias. Palms are found figured on the coins of Ephesus, of Hierapytna and Priansus in Crete, of Karystos in Eubœa, and on painted vases."[48]

From the evidence before us, I am convinced that the conical flower cluster of the palm, as conventionalized in sculpture, and as the thyrsus tip, was mistaken by the later Greeks for the pine cone, and that they and subsequent writers have been ignorant of the peculiar relations of the date palm to the primitive Dionysiac cult.

[47] *Wanderings of Plants and Animals from their First Home*, by Victor Hehn, London, 1885, p. 204.

[48] Cf. Imhoff Bloomer and Otto Keller, *Thier- und Pflanzenbilder auf Munzen und Gemmen des Klassischen Altertums*, Pl. i, Fig. 8; ii, 13; x, 2–4.

Observations on the Psoas Parvus and Pyramidalis. A Study of Variation.

By Thomas Dwight, M.D., LL.D.,

Parkman Professor of Anatomy at Harvard University.

(*Read before the American Philosophical Society, March 17, 1893.*)

The only anatomist who has made observations as to the presence or absence of the psoas parvus on a really large scale is the late Prof. Gruber, of St. Petersburg. After him, at a considerable interval, comes Mr. Hallet, and again, at an interval, Mr. Perrin. So far as I am aware no other anatomist has published observations sufficiently numerous to discuss.* As evidence that this deficiency really exists, I may refer to the zeal with which Theile's results on 20 bodies are quoted.

Perrin† found the psoas parvus in 32 of 112 subjects. Of these 32, 21 were males and 11 females. He states that the sexes were about evenly divided in the whole number examined. He gives no details as to the occurrence of the muscle on one or both sides.

Hallet‡ gives the results of two years' observations in the dissecting room at Edinburgh, on about one hundred subjects each year. In his first set of observations the psoas parvus was more frequently present than absent, 61 to 54, and this proportion was preserved throughout the second hundred subjects. He remarks that when it is present it is most frequently found on one side, and that the right one. "In the first hundred subjects dissected it was found as often deficient in the female as in the male, but in the second hundred it was more frequently present in the proportion of seven to six."

We come now to the only satisfactory statistics, those of Gruber.§ He gives first a series of observations of both sides of 450 bodies, of which 300 were male and 150 female. He made later observations for a particular purpose on 300 subjects in which the sexes were equally divided. The close correspondence between these two series is very remarkable.

First Series.

	300 male.	150 female.	450 of both sexes.
Present on both sides	142 = 47.3%	56 = 37.3%	198 = 44%
Present on neither side	111 = 37	72 = 48	183 = 40.6
Present on right side only	22	11	33
Present on left side only	25	11	36
	47 = 15.7	22 = 14.7	69 = 15.4

* This paper was read December 28, 1892, at the meeting of the Association of American Anatomists at Princeton. The context will show that one addition has been made since the reading.

† *Medical Times and Gazette*, 1872.

‡ *Edinburgh Medical and Surgical Journal*, 1848, Vol. i, and 1849, Vol. ii.

§ *Beobachtungen aus der menschlichen und vergleichenden Anatomie*, Heft 1, 1879. I have transposed Gruber's figures so as to show the presence rather than the absence of the muscle, and have substituted percentages for his rather crude proportions.

SECOND SERIES.

	150 MALE.		150 FEMALE.		300 OF BOTH SEXES.	
Present on both sides	70 = 46.6 %		59 = 39.3 %		129 = 43 %	
Present on neither side	56 = 37.3		69 = 46		125 = 41.6	
Present on right side only	11	24 = 16.1	10	22 = 14.7	21	46 = 15.4
Present on left side only	13		12		25	

The percentages are so nearly alike that there is no occasion to combine the series. The subjects came from all parts of Russia, and were mostly Sclaves. The following results are self-evident: 1. That, at least on one side, the muscle is more frequently present than wanting, although in more than half the cases it is wanting on at least one side. 2. That it is more common in man than woman. 3. That the two sides are alike very much more often than unlike. This is directly contradictory of Hallet's results. 4. That practically it is found as often on one side as on the other.

Since this paper was first read the report of the Committee of Collective Investigation of the Anatomical Society of Great Britain and Ireland has appeared.* It shows that 457 bodies were examined and that the muscle was wanting in 270 (59 per cent.), that it was present on both sides in 139 (30 per cent.), on one side in 48 (11 per cent.). It was found only on the right side 27 times against 21 on the left. It was therefore more often wanting than present. The sex was stated only in 174 instances. Both muscles were wanting in 54 per cent. of the males, and in 65 per cent. of the females.

The observations about to be reported were made at the Harvard Medical School. Those on negroes are not included in any series. As it often happened that the observation on one side of a subject had been neglected, or for some reason had to be discarded, I give first a series of observations in which only the number of sides of bodies is considered. It comprises 608 sides, divided into 299 right sides and 309 left sides, and also by the sexes. It shows that considering sides only, the muscle is more often wanting than present; that it is more common in man than in woman, and that there is little difference between the sides.

FREQUENCE OF PSOAS PARVUS IN 608 SIDES.

		RIGHT.	LEFT.	TOTAL.
Male	Present	89	88	177
	Wanting	102	121	223
	Total	191	209	400
	Per cent. present	46.5	42.1	44.2

* *Journal of Anat. and Phys.*, Vol. xxvii, January, 1893.

		RIGHT.	LEFT.	TOTAL.
Female.....	Present	33	30	63
	Wanting	75	70	145
	Total.....	108	100	208
	Per cent. present.....	30.5	30	30.2
Both Sexes.....	Present	122	118	240
	Wanting	177	191	368
	Total.....	299	309	608
	Per cent. present.....	40.8	38.1	39.4

The next table shows the results of observations on both sides of two hundred and fifty subjects.

PSOAS PARVUS. RECORDS OF BOTH SIDES OF 250 SUBJECTS, 165 MALE, 85 FEMALE.

	MALE.	FEMALE.	BOTH SEXES.
Present on both sides.....	60 = 36.3%	20 = 23.5%	80 = 32%
Present on neither side....	84 = 50.9	53 = 62.3	137 = 54.8
Present on right side only..... 14	21 = 12.7	5	12 = 14.1	19	33 = 13.2
Present on left side only..... 7		7		14	
Total.....	165 = 99.9	85 = 99.9	250 = 100.0

This shows the muscle decidedly less frequent than Gruber found it, and a little more frequent than would appear from the English observations; thus suggesting the influence of race.

In order to study the relative variability of muscles, to ascertain whether the presence of one occasional muscle renders the presence of another more probable, the pyramidalis was chosen as a starting point. It was chosen because it is generally held that while it is present in a large majority of instances it is not uncommonly wanting. Though this impression is, I believe, general, there is, so far as I know, no large series of observations on the pyramidalis ex cepting Hallet's. In his two hundred subjects he found it wanting in the proportion of once in nine or ten.* In the following table of observations at the Harvard Medical School, individual sides only are considered.

PYRAMIDALIS IN 673 SIDES.

		RIGHT.	LEFT.	TOTAL.
Male.	Present.....	180	189	369
	Wanting	45	36	81
	Total.....	225	225	450
	Per cent. present.....	80	84	82

* *Loc. cit.* It is worthy of notice that in his first hundred it was wanting once in every three subjects, and once in every fifteen in his second hundred.

		RIGHT.	LEFT.	TOTAL.
Female.....	Present.....	80	83	163
	Wanting.....	34	26	60
	Total.....	114	109	223
	Per cent. present.....	71	76.1	73
Both Sexes.....	Present.....	260	272	532
	Wanting.....	79	62	141
	Total.....	339	334	673
	Per cent. present.....	76.6	81.4	79

The above table of sides only shows the muscle present only in 83 per cent. of the male sides, in 73 per cent. of the female, and in 79 per cent. of those of both sexes, which, however, were unequal. It was somewhat more common on the left.

The next table shows the results in the same series of two hundred and fifty subjects which was used for the psoas parvus.

PYRAMIDALIS RECORDS OF BOTH SIDES IN 250 SUBJECTS, OF WHICH 165 WERE MALE AND 85 FEMALE.

	MALE.		FEMALE.		BOTH SEXES.	
Present on both sides.....	125	= 75.6%	58	= 68.1%	183	= 73.2%
Present on neither side...	25	= 15.1	22	= 25.9	47	= 18.8
Present on right side only..... 5	15	= 9.0	0	5 = 5.8	5	20 = 8.0
Present on left side only.....10			5		15	
Total.....	165	= 99.7	85	= 99.8	250	=100.0

This shows, in addition to what was shown by the preceding table, that the two sides were alike in 92 per cent.

We must now subdivide this series into smaller groups according to the presence or absence of pyramidalis and psoas parvus considered collectively.

RECORDS OF BOTH MUSCLES ON BOTH SIDES IN 250 CASES, OF WHICH 165 WERE MALE AND 85 WERE FEMALE.

GROUP.	SEX.	NUMBER.	PER CENT.
A. Pyramidalis and psoas parvus on both sides.	Male.....	48	29
	Female.....	16	18.8
	Both sexes.....	64	25.6

GROUP.	SEX.	NUMBER.	PER CENT.
B. Pyramidalis on both sides. Psoas parvus on one side.	Male	18	10.9
	Female	9	10.5
	Both sexes	27	10.8
C. Pyramidalis on both sides. No psoas parvus.	Male	59	35.7
	Female	33	38.8
	Both sexes	92	36.8
D. Pyramidalis on one side. Psoas parvus on both sides.	Male	4	2.4
	Female	0	0
	Both sexes	4	2.4
E. Pyramidalis on one side. Psoas parvus on one side.	Male	1	.6
	Female	1	1.1
	Both sexes	2	.8
F. Pyramidalis on one side. No psoas parvus.	Male	10	6
	Female	4	4.7
	Both sexes	14	5.6
G. No pyramidalis. Psoas parvus on both sides.	Male	8	4.8
	Female	4	4.7
	Both sexes	12	4.8
H. No pyramidalis. Psoas parvus on one side.	Male	2	1.2
	Female	2	2.3
	Both sexes	4	1.6
I. No pyramidalis. No psoas parvus.	Male	15	9.6
	Female	16	18.8
	Both sexes	31	12.4

These tables show, as would naturally be expected, that the largest group (C) is that of two pyramidales and no psoas, and that this is the largest in either sex. For the next largest groups we have to examine the sexes separately, for we find that 29 per cent. of the men (A) have all four muscles, while precisely an equal number of women (18.8 per cent.) (A

and I) have all four, and none of the four. Only 9.6 (I) per cent. of the men have all four wanting.

By way of a more exact method of determining what relation there may be between the presence or absence of one muscle and that of the other, I have put together all the cases of presence of both pyramidales, groups A, B and C, into one series, and reckoned the percentages of instances of a psoas parvus on both sides and on neither side, to compare them with the percentages of the normal series.

We find 125 men and 58 women, 183 in all, having both pyramidales; of these 48 men and 16 women have the psoas parvus on both sides. Calculating the percentages we find that 38.4 per cent. of these men, 27.6 of the women and 34.9 of the whole, have the psoas parvus on both sides, against 36.3, 23.5 and 32 respectively as percentages of the whole series of 250. We find, therefore, that a subject with two pyramidales is a little more likely to have the psoas on both sides than one which has not. The next step is to take as a basis the cases of no pyramidalis, and to find whether in them the percentage of psoas parvus on both sides is different from that of the entire series. We find that 25 men and 22 women, 47 in all, had no pyramidalis; of these, 8 men and 4 women, 12 in all, had the psoas parvus on both sides, giving percentages of 32, 18.4 and 25.5 respectively, against 36.3, 23.5 and 32 in the entire series, showing that subjects with no pyramidales are less likely to have the psoas parvus on both sides than others. Thus we seem to have found a tendency, though a slight one, in variations by excess and variations by defect to go together respectively.

By way of further comparison I have counted the number in these 250 subjects in which the palmaris longus was known to be absent on both sides. I find this is recorded in 21 cases, and very probably occurred in some others. Let us see whether in these 21 cases there was a more frequent deficiency of either pyramidalis or psoas minor than one would expect. We find nothing of the kind. As for the pyramidalis we find it was wanting in three cases only on both sides and once on one side. The psoas parvus was present on both sides seven times, almost precisely the percentage of the series of 250.

Finally I found among these 250 cases, 12 in which a sternalis was present on one or both sides (twice on both sides and ten times on one). This is what may be called an anomaly by excess. Let us see whether the series of subjects presenting it was marked by more than ordinary frequency of the pyramidalis and psoas parvus. The result is certainly remarkable, for it is the very reverse of what might be expected. In these 12 the pyramidalis was wanting on both sides in 4, and on one side in 3, leaving it therefore present on both sides in only 5. The psoas parvus was more normal, being present on both sides in 5, on one side in 1, and wanting in 6. If we take these two muscles together we find that both were absent on both sides 3 times, a percentage of 25, which is about twice that in the entire series. It cannot be denied that this series of twelve

subjects with sternales is too small, and yet there is some reason to think that a larger series would give the same result only more strikingly. Thus there are three other cases of sternalis which could not be included, because in each the record of one psoas was wanting. The first had 2 pyramidales, one psoas was wanting, the other unaccounted for; in the second and third both pyramidales and the recorded psoas were wanting. As we have found that the two sides generally agree it is probable that the unrecorded psoas was in all these instances wanting. In any case if these could have been added to the series they would materially have diminished the frequency of psoas parvus and pyramidalis when the sternalis was present. The criticism may be made that the sternalis should not be reckoned as an instance of excessive differentiation, for it is found with abnormal frequency in anencephalous fœtuses and there is reason in some cases at least to look upon it as a displacement of some fibres of the pectoralis major. It is to be remarked, however, that it is in these monsters, rather than in adults, that the deficiency of the pectoral is common. No one would think of including them in a series for the study of the frequency of variations. In normal bodies the sternalis may, I think, be called an anomaly by excess.

These two sets of cases, namely those of absence of the palmaris longus and presence of the sternalis, the latter especially, tend to disagree with the conclusions reached on the series of the psoas parvus and pyramidalis. None the less I am disposed to allow the series of psoas and pyramidalis a certain weight. But granting that there is a tendency for variations by excess and deficiency to go together respectively, the fact seems to be that the tendency is a slight one and that probably the cause, whatever it may be, that determines the differentiation of muscles must be considered as acting in most cases on each independently of the others.

Again the only large series of observations bearing on this point is by Gruber. It deals with the psoas parvus, the palmaris longus, and the plantaris of 300 subjects equally divided between the sexes. His system of tabulation is not easy nor altogether satisfactory. He discusses the relative frequency of defect of these muscles, but apparently from rather a different standpoint. In no case were all three muscles wanting on both sides. In three cases only were two of them wanting in both sides and one on one side. Absence of palmaris and plantaris in the same subject was also very uncommon. In two cases both palmares and one plantaris were wanting. In no case, apparently, were both wanting on both sides.

On a New Method of Determining the General Perturbations of the Minor Planets.

By W. F. McK. Ritter, of Milton, Pa.

(*Read before the American Philosophical Society, March 17, 1893.*)

In finding the general perturbations of the minor planets the special difficulty arises from the large eccentricity and inclination of these bodies. The methods used in case of the major planets fail when applied to the minor, on account of want of convergence in the series. Astronomers were content, therefore, for a long time, with computing the special perturbations of these bodies from epoch to epoch. Hansen finally succeeded in effecting a solution of the problem, and his work entitled, *Auseinandersetzung einer Zweckmässigen Methode zur Berechnung der Absoluten Stöungen der Kleiner Planeten*, contains all the formulæ necessary in the cases thus far occurring.

Instead of determining the perturbations of the coördinates, rectangular or polar, or of finding the variations of the elements, as had been done by his predecessors, Hansen, in his mode of treatment, regards the elements as constant, and finds what we may term the perturbation of the time. Thus, in place of the time, he uses a function of the time, which he designates by s; so that if g_0 is the mean anomaly at the epoch, we have the mean anomaly at any time, in the disturbed orbit, given by $g_0 + n_0 s$, n_0 being the mean daily motion, and being one of the constants. If there were no perturbations we should have $g_0 + n_0 t$, t being the time elapsed since the epoch.

In effecting his solution of the problem, Hansen does not attempt to give general and complete analytical expressions of the series. Instead, he, at the start, converts the coefficients into numbers, and multiplies the series together, two and two, by the methods of trigonometry. Thus, although we find, finally, the perturbations as functions of the time, that is, have the general perturbations, yet, in applying the method to different bodies, we must find the values of all the quantities involved for the particular case under consideration. It would be a great advance if we had at hand complete analytical expressions, of sufficient convergence, as is the case with the larger planets.

Besides the method of multiplying series together by the methods of trigonometry, which Hansen calls "Mechanical Multiplication"—a method he was the first to employ—he also adopts different angles with which to express his arguments. Thus at the outstart he uses the eccentric anomaly for both bodies. When he has computed the powers of the reciprocal of the distance between the disturbed and disturbing bodies, he transforms from eccentric to mean anomaly in case of the disturbing body. And then, when he has expressions for the perturbing function and the forces, he makes another transformation so as to be able to effect the integrations.

The transformations must be done with great care, and require a large measure of time. In addition to the tedium arising from extended operations of this kind (which must be generally done in duplicate to insure accuracy), many of the processes in various stages of the work are not easily grasped, and certainty is often only secured by performing the numerical calculations. Thus, then, although the method has been published for a long time, it has been applied only in a very limited number of cases. Watson, in the Preface to his *Theoretical Astronomy*, says: "The refined and difficult analysis and the laborious calculations involved were such that, even after Hansen's methods were made known, astronomers still adhered to the method of special perturbations by the variation of constants as developed by Lagrange."

Hansen seems himself to have felt the force of these drawbacks on his method, as in a posthumous memoir devoted to the larger planets he abandons his peculiar method of treatment and uses that of Lagrange.

As far as the minor planets are concerned, there is no doubt that Hansen's method, as left by him, is too long and difficult to be practicable.

What we need now is some mode of determining general perturbations that is easily applied and sufficiently short to attract the efforts of a larger number of competent computers. Only in this way can the constantly growing material be utilized. The new method of treatment will now be given as briefly as possible.

If Δ be the distance between the disturbed and disturbing bodies, Hansen has the equation

$$\left(\frac{a}{\Delta}\right)^n = \left\{C - q\cos(\varepsilon' - Q)\right\}^{-\frac{n}{2}} \left\{1 - q_1(\cos\varepsilon' + Q)\right\}^{-\frac{n}{2}}$$

for finding $\left(\frac{a}{\Delta}\right)$, $\left(\frac{a}{\Delta}\right)^3$, etc.

Instead of the two factors of the second member, I have used a transformation of them given by Hill, and have

$$\left(\frac{a}{\Delta}\right)^n = N^n \left(1 + a^2 - 2a\cos(\varepsilon' - \theta)\right)^{-\frac{n}{2}} \left(1 + b^2 - 2b\cos(\varepsilon' + Q)\right)^{-\frac{n}{2}},$$

where $\left(1 + a^2 - 2a\cos(\varepsilon' - \theta)\right)^{-\frac{n}{2}} = \left[\frac{1}{2}b^{(0)}_{\frac{n}{2}} + b^{(1)}_{\frac{n}{2}}\cos(\varepsilon' - Q) + b^{(2)}_{\frac{n}{2}}\cos 2(\varepsilon' - Q) + \text{etc.}\right]$,

and similarly for $\left(1 + b^2 - 2b\cos(\varepsilon' + Q)\right)^{-\frac{n}{2}}$.

The coefficients of both these factors are the La Place coefficients, and their values have been tabulated. Thus the part of the work relating to the determination of expressions for $\left(\frac{a}{\Delta}\right)$, $\left(\frac{a}{\Delta}\right)^2$, etc., is rendered comparatively short and simple.

In finding Δ^2 in terms of the radii vectores of the two bodies and of the cosine of the angle between these radii-vectores, the true anomaly of both bodies is introduced. In the analysis we use the equivalent functions of the eccentric anomaly for those of the true anomaly, and then, when making the numerical computations, we cause the eccentric anomaly of the disturbed body to disappear. This is accomplished by dividing the circumference into a certain number of equal parts relative to the mean anomaly, and employing for the eccentric anomaly its numerical values corresponding to the various values of the mean anomaly.

Having found the expressions of $\left(\frac{a}{\Delta}\right)$, $\left(\frac{a}{\Delta}\right)^2$, etc., in series, in which the angles are the mean anomaly of the disturbed and the eccentric anomaly of the disturbing body, the series are changed at once into others in which both angles are mean anomalies. To effect this transformation there is need of functions called the J functions; and a chapter is given in which the expressions for these functions are found in a form convenient for application.

When we have the powers of the reciprocal of the distance between the disturbed and disturbing bodies, we next find the term expressing the effect of the action of the disturbing body on the sun. This is effected without difficulty.

The expressions for the perturbing function and the perturbing forces can now be formed. Instead of using the force involving the true anomaly, the transformation of this, in which the mean anomaly appears instead of the true, has been used. This is the method given by Hansen in his posthumous memoir, in which he has abandoned some of his former notions. The disturbing forces employed are those in the direction of the disturbed radius-vector, in the direction perpendicular to this radius-vector, and in the direction perpendicular to the plane of the orbit. The forces in these three directions have been deduced from those in the direction of the three rectangular axes. The force $a\frac{d\Omega}{dg}$ is found at once from the perturbing function by differentiating with respect to the mean anomaly, g.

To find the other two forces symbolized by $a\,r.\frac{d\Omega}{dr}$, and $a^2\frac{d\Omega}{dz}$, z being the coördinate perpendicular to the plane of the orbit, it is necessary to multiply a number of series together, two and two, by the formulæ of plane trigonometry.

Having the values of the forces, we next find the value of a function W obtained by the integration of the expression

$$\frac{dW}{n.\,dt} = A.\,a\frac{d\Omega}{dg} + B.\,a\,r\frac{d\Omega}{dr},$$

A and B being two factors easily determined. W being known, the function $\overline{W}$ is next found by simple mechanical processes, and the perturbations of z and of the radius-vector are found at once by the equations

$$n.\ \delta z = n \int . \overline{W}.\ dt$$

$$v = -\tfrac{1}{2}\, u \int \frac{d\overline{W}}{d\gamma}.\ dt,$$

γ being a particular form for g.

The symbol δ designates the perturbation of the quantity to which it is prefixed.

The perturbation of the latitude is found by integrating the equation

$$\frac{d.\dfrac{u}{\cos i}}{n.dt} = C.\ a^2\ \frac{d\Omega}{dz},$$

where C is a factor found in the same manner that A and B were.

To find $n.\delta z$, or the variation of the mean anomaly, two integrations are necessary; in finding the perturbation of the radius-vector, and of the latitude, one integration is needed for each.

The arbitrary constants introduced by these integrations are so determined that the perturbations become zero for the epoch of the elements.

In making an application of his formulæ, Hansen selected the planet Egeria, whose eccentricity is comparatively small, the angle of eccentricity being less than five degrees. In making use of the formulæ given in the method here presented the eccentricity is considerably larger. The convergence of the series is, however, all that can be desired. In computing the perturbations of those of the minor planets whose eccentricities and inclinations are quite large, it may be necessary to divide the circumference into a larger number of parts. In exceptional cases, such as for Pallas, it may be necessary to divide the circumference into thirty-two parts. In case of the applications made of the present method, sixteen divisions have been used: this is the number employed by Hansen for Egeria.

When a larger number than sixteen is used, the calculation of the values of $\left(\frac{a}{\Delta}\right)$, $\left(\frac{a}{\Delta}\right)^3$, etc., is longer; the process is, however, the same in every case.

After the perturbations have been found it is necessary to have them in convenient form for the computation of ephemerides, and there has, hence, been added the method employed for doing this.

The writer has endeavored to present the whole theory in a manner easily comprehended by those having a respectable mathematical education, and in a compass such that the computations can be performed within a reasonably short time. The endeavor throughout has been to use convenient methods, not to devise new ones.

Stated Meeting, March 3, 1893.

Dr. BRINTON in the Chair.

Correspondence was submitted as follows:

Letters accepting membership were received from Prof. George Lincoln Goodale, Cambridge, Mass.; Dr. Charles Schäffer, Philadelphia.

A circular from the Académie de Belgique, Bruxelles, requesting subscriptions to a commemorative edition of the works of Jean-Servais Stas.

The death of Prof. C. Schorlemmer, Manchester, England, January 27, 1892, was announced.

Letters of acknowledgment were received from the Royal Society of Victoria, Melbourne (137); Tokyo Library, Tokyo, Japan (136, 137, 138); Royal Zoölogical Society, Amsterdam, Netherlands (137, 138); Naturwissenschaftlicher Verein des Reg.-Bezirks, Frankfurt a. O., Prussia (135–138); Oberhessische Gesellschaft für Natur- und Heilkunde, Giessen, Hesse (138); Verein für Thüringische Geschichte und Alterthumskunde, Jena, Saxe-Weimar (138); Verein für Erdkunde, Metz, Lorraine (138); Società Italiana delle Scienze, Rome, Italy (138); Natural History and Philosophical Society, Belfast, Ireland (138); Université Laval, Quebec, Canada (137, 138, and Catalogue i–iv); Editor of *Popular Science Monthly*, New York, N. Y. (139); Wyoming Historical and Geological Society, Wilkesbarre, Pa. (138); Enoch Pratt Free Library, Baltimore, Md. (137, 138, and Catalogue i–iv); Mr. T. L. Patterson, Cumberland, Md. (139); Texas Academy of Science, Austin (137, 138, and Catalogue, i–iv).

Letters of acknowledgment (139) were received from the Laval University, Quebec, Canada; Natural History Society, Sir John W. Dawson, Montreal, Canada; Public Library, Marine Biological Laboratory, Boston, Mass.; Agricultural Experiment Station, Kingston, R. I.; Historical Society, Providence Franklin Society, Providence, R. I.; Mr. George F. Dunning, Farmington, Conn.; Connecticut Historical Society, Hartford,

Conn.; Prof. W. Henry Green, Princeton, N. J.; Dr. Charles B. Dudley, Altoona, Pa.; Dr. Robert H. Alison, Ardmore, Pa.; Prof. Robert W. Rogers, Carlisle, Pa.; Prof. Martin H. Boyé, Coopersburg, Pa.; Hon. Eckley B. Coxe, Drifton, Pa.; Drs. Traill Green, J. M. Moore, Thomas Conrad Porter, Easton, Pa.; State Library of Pennsylvania, Harrisburg, Pa.; Mr. John Fulton, Johnstown, Pa.; Linnean Society, Lancaster, Pa.; Wagner Free Institute, Judge Allison, Profs. Charles S. Dolley, H. V. Hilprecht, Albert H. Smyth, W. H. Greene, Messrs. Philip C. Garrett, Edward Hopper, W. W. Jefferis, G. de B. Keim, Joseph D. Potts, L. A. Scott, Richard Wood, Philadelphia; Prof. John F. Carll, Pleasantville, Pa.; Rev. F. A. Muhlenberg, Reading, Pa.; Miss R. C. Longstreth, Sharon Hill, Pa.; Dr. John Curwen, Warren, Pa.; Philosophical Society, Hon. Washington Townsend, Mr. Philip P. Sharples, West Chester, Pa.; Wyoming Historical and Geological Society, Wilkesbarre, Pa.; Mr. William M. Canby, Wilmington, Del.; U. S. Naval Institute, Annapolis, Md.; Maryland Institute, Enoch Pratt Free Library, Maryland Historical Society, Baltimore, Md.; Smithsonian Institution, Anthropological Society, U. S. Geological Survey, U. S. Coast and Geodetic Survey, Library Surgeon General's Office, Scientific Library U. S. Patent Office, Weather Bureau, Col. Garrick Mallery, Prof. Charles A. Schott, Dr. John S. Billings, Washington, D. C.; University of Virginia, Leander McCormick Observatory, Prof. J. W. Mallet, University of Virginia, Va.; N. C. Agricultural Experiment Station, Raleigh; South Carolina College, Columbia; Historical Society, Savannah, Ga.; University of Alabama, University P. O.; Agricultural Experiment Station, Baton Rouge, La., College Station, Texas; Academy of Science, Austin, Texas.

Accessions to the Library were reported from the Institut Égyptien, Cairo; Royal Society of South Australia, Adelaide; Linnean Society of New South Wales, Sydney; Royal Geographical Society, St. Petersburg, Russia; Société Finno-Ougrienne, Helsingfors, Finland; Société Hollandaise des Sciences, Harlem, Holland; K. K. Geologische Reichsanstalt,

K. K. Naturhistorische Hofmuseum, Vienna, Austria; Deutsche Seewarte, Hamburg, Germany; K. B. Akademie der Wissenschaften, Munich, Bavaria; Würtembergische Commission für Landesgeschichte, Stuttgart; Messrs. Friedländer & Sons, Berlin, Prussia; Society of Antiquaries, Geological Society, London, England; Royal Irish Academy, Dublin; Public Library, Salem, Mass.; American Chemical Society, New York, N. Y.; Bureau of Statistics of New Jersey, Trenton; Pennsylvania Forestry Association, Dr. J. C. Ayer & Co., Dr. Charles A. Oliver, Messrs. Henry Phillips, Jr., Julius F. Sachse, Prof. M. B. Snyder, Philadelphia, Pa.; U. S. Fish Commission, Hydrographic Office, Washington, D. C.; Mr. William Harden, Savannah, Ga.; State Historical Society of Wisconsin, Madison; Agricultural Experiment Stations, Kingston, R. I., Blacksburg, Va., Lexington, Ky., Manhattan, Kans., Fort Collins, Col., Laramie, Wyo.

Pending nominations Nos. 1249, 1250, 1253, 1255 and 1256 were read.

A motion to introduce electric lighting into the building was after discussion withdrawn.

And the Society was adjourned by the Presiding Member.

Stated Meeting, March 17, 1893.

Mr. PRICE in the Chair.

Correspondence was submitted as follows:

A letter from Hon. Robert E. Pattison, Harrisburg, Pa., accepting membership.

A letter from Prof. Robert E. Thompson, Philadelphia, resigning from membership at end of the current year, which was accepted.

The Journal of the United States Artillery School, Fortress Monroe, Va., was placed on the Proceedings exchange list.

Letters of envoy were received from the Meteorological Office, London, Eng.; Royal Irish Academy, Dublin, Ireland; Observatorio Astronómico Nacional, Mexicano, Tacubaya.

Letters of acknowledgment (139) were received from the Theological Seminary, Andover, Mass.; New York Academy of Sciences, Columbia College, New York; New Jersey Historical Society, Newark; Prof. Charles F. Himes, Carlisle, Pa.; Rev. F. A. Muhlenberg, Reading, Pa.; Department of State, Washington, D. C.; Prof. James B. Angell, Ann Arbor, Mich.; Col. William Ludlow, Gen. W. F. Raynolds, Detroit, Mich.; State Library, Lansing, Mich.; Oberlin College, Oberlin, O.; Prof. E. W. Claypole, Akron, O.; University of Cincinnati, Hon. J. D. Cox, Cincinnati Observatory, Cincinnati, O.; Dr. Robert Peter, Lexington, Ky.; Geological Survey of Missouri, Jefferson City; Academy of Sciences, St. Louis, Mo.; Historical Society, Chicago, Ill.; State Historical Society of Wisconsin, Madison; University of California, Prof. Joseph LeConte, Berkeley, Cal.; Lick Observatory, Mount Hamilton, Cal.; Prof. J. C. Branner, Palo Alto, Cal.; Prof. Daniel Kirkwood, Riverside, Cal.; Free Public Library, San Francisco, Cal.; Academy of Natural Sciences, Davenport, Ia.; State University of Iowa, Iowa City; Washburn College, Kansas Academy of Science, Topeka; Agricultural Experiment Stations, Las Cruces, N. M., Lincoln, Neb., Laramie, Wyo.; University of Arizona, Tucson.

Accessions to the Library were reported from the K. Nordeske Oldskrift Selskab, Copenhagen, Denmark; Société Batave de Philosophie Expérimentale, Rotterdam, Holland; Physikalische Gesellschaft, Berlin, Prussia; Verein für Erdkunde, Metz, Lorraine; K. B. Akademie, München, Bavaria; Messrs. Alphonse Pictet, Henri de Saussure, Geneva, Switzerland; Società Africana D'Italia, Naples; Direzione Generale della Statistica, Rome, Italy; Société Languedocienne de Géographie, Montpellier, France; Mr. Manuel de Peralta, Madrid, Spain; Meteorological Office, London, Eng.; Literary and Philosophical Society, Manchester, Eng.; Mr. Robert T. Swan, Boston, Mass.; Free Public Library, New Bedford,

Mass.; Scientific Alliance, New York, N. Y.; Pennsylvania State College, Harrisburg; Mr. Herbert Welsh, Philadelphia; Smithsonian Institution, United States Geographical and Geological Survey of the Rocky Mountains, Adjutant General's Office, Washington, D. C.; Artillery School, Fortress Monroe, Va.; Society of Natural History, Cincinnati, O.; Academy of Science, Tacoma, Washington; Agricultural Experiment Stations, College Park, Md., Morgantown, W. Va., Little Rock, Ark.

The following decease of members was announced:

Hippolyte Taine, Paris, March 5, 1893, æt. 65.
William B. Rogers, Philadelphia, March 15, 1893, æt. 55.

On motion, the President was requested to prepare an obituary notice of Mr. Rogers.

Secretary Barker presented for the Transactions a paper by Prof. Francis C. Phillips entitled, "Researches upon the Chemical Properties of Gases," which was referred to Drs. Barker, Marshall and Smith, a Committee to examine and report upon the same.

A paper by Prof. A. S. Packard, entitled "The Life Histories of Certain Moths of the Families Ceratocampidæ and Hemileucidæ, etc.," was presented by the Secretaries for the Proceedings.

Prof. Snyder presented a paper by W. F. McK. Ritter, "On a New Method of Determining the General Perturbation of the Minor Planets."

Dr. Cope presented a paper by Prof. Dwight, on "Psoas Parvus and Pyramidalis."

Pending nominations Nos. 1249, 1250, 1253, 1255, 1256, were read.

According to notice, the stated business of the evening, the question of withdrawing the Society's collections now on deposit in other institutions, was taken up.

The following minute of the meeting of Council was read:

STATED MEETING, FEBRUARY 10, 1893.

Present: Messrs. Morris, Brinton, Baird, Ingham.

In the absence of the President, on motion, Mr. Baird took the chair.

Minutes of the last meeting of Council were read.

Dr. Brinton, acting Clerk, read the resolution of the Society which was referred to Council for action.

Dr. Morris read the resolution of the Curators, and gave his reasons for holding that the collections of the Society should be retained and exhibited in its present hall.

Mr. Ingham moved that all the collections of the Society be brought back to the hall of the Society; seconded by Dr. Morris.

Dr. Brinton spoke strenuously in opposition to the motion, and claimed that it was contrary to the spirit of the act incorporating the Society.

Other remarks were made by the members present, Dr. Morris urging the adoption of the motion as in accordance with the spirit of the Society.

The motion being put by the Chair, it was carried.

The Council was adjourned by the Chair at 9.30.

D. G. BRINTON, *Clerk.*

Mr. Prime moved to lay the resolution of Council on the table, but subsequently withdrew the motion in order that the subject might be fully discussed. An animated debate ensued, participated in by Messrs. Houston, Prime, Brinton, Morris, Cope, Jayne, Biddle, Du Bois, Barker, Field and others.

The Presiding Member stated certain reasons that in his opinion rendered the return of the collections at the present time desirable.

The question being put and a call of the yeas and nays demanded, the motion was lost by a vote of 16 nays to 8 ayes.

And the Society was adjourned by the Presiding Member.